LANARK COUNTY

PLANNING DEPARTMENT

December 18, 2023

Nathan Adams
115 Blackberry Way
Dunrobin, Ontario

Via email: escapehomesconsulting@gmail.com

RE: Verification of a Complete Application for a Draft Plan of Subdivision and Condominium
Part of Lots 12 and 13, Concession 11, formerly Township of Beckwith, now Town of Carleton Place, County of Lanark
County of Lanark File No. 09-T-23008

This letter is to that the above noted application for draft plan of subdivision has been determined to be complete having met the requirements of subsections 51(17) and (18) of the *Planning Act.* The 'deemed complete' date is December 18, 2023.

The receipt for payment of the application fee and deposit will be provided upon request.

Should you have any questions or concerns, do not hesitate to contact me at 1-613-267-4200 Ext 1505 or klam@lanarkcounty.ca

Yours truly,

Koren Lam
Senior Planner

Cc: Eric Bays, Stantec
Jasmin Ralph, Lanark County

254 LAKE AVENUE WEST
Planning Rationale

October 4, 2023

Prepared for:
Escape Homes

Prepared by:
Stantec Consulting Ltd.

Project Number:
160410347

Revision	Description	Author	Date	Quality Check	Date	Independent Review	Date
0	Initial Submission	E Bays	10/23	S Shahzadeh	10/23	S Willis	10/23

Table of Contents

LIST OF APPENDICES

1 INTRODUCTION

Stantec Consulting Ltd. has been retained by Escape Homes as to prepare the following planning rationale in support of concurrent Plan of Subdivision and Plan of Condominium applications for its property at 254 Lake Avenue West, the site of the former River Breeze Inn.

The proposal will divide the property into seven new development parcels and establish a common elements condominium for the purpose of maintaining a private sanitary collection and pump system for the benefitting parcels. The private sanitary system is required to collect and transfer sanitary flows to an outflow beneath Lyndhurst Street to the east, which is located at a higher elevation. A pressurized sanitary forcemain is located beneath Lake Avenue West to which service laterals cannot be connected.

The seven new parcels will be either sold or developed by Escape Homes once required services are constructed. The parcels have been arranged to accommodate a variety of residential uses including detached, semi-detached, and fourplex dwellings.

This rationale will describe the property's location and context, existing site conditions, and development proposal before detailing how the proposal is consistent with, conforms to, and complies with applicable planning policies and requirements.

2 CONTEXT AND DEVELOPMENT PROPOSAL

2.1 Site Location and Context

The property is located in the Town of Carleton Place approximately 750 m southwest of Bridge Street, the Town's main commercial street. The property, municipally known as 254 Lake Avenue West, is a corner lot located at the southwest corner of the intersection of Lake Avenue West and Mississippi Road. The property is legally described as *Part of Lots 12 and 13, Concession 11, formerly Township of Beckwith, now Town of Carleton Place, County of Lanark*.

The property is exceptionally large with 125.5 m of frontage on Lake Avenue West (to the north), 41.3 m of frontage on Mississippi Road (to the east) an area of 4,892 m^2. The property is rectangular in shape with a pronounced slope from Mississippi Road downwards to the west.

Figure 1: Aerial imagery of the subject site and surrounding context.

This area of Carleton Place is characterized by low-rise residential uses, mostly one and two-storey single detached dwellings, and some institutional uses. There is also a large amount of park space available directly abutting the property. The former River Breeze Inn is a larger two-storey detached building located currently located on the east end of the property; the remainder of the site is vacant. The dwelling is serviced by municipal water but maintains a private septic system.

The following uses surround the property:

North: The property is bounded to the north by Lake Avenue West- a collector street with a posted speed limit of 50 km/h. On the opposite side of Lake Avenue West is Riverside Park, a large formal greenspace providing public access to the south shore of the Mississippi River. Riverside Park contains a number of amenities including the Riverfront Trail, municipal boat launch, Carleton Place Canoe Club, and a public beach. Carleton Place High School (Upper Canada District School Board) provides intermediate and secondary education to approximately 900 students.

East: The property is bounded to the east by Mississippi Road- a collector street. On the opposite side of the east are one and two-storey detached dwellings fronting onto Lyndhurst Street and Blair Street to is a single detached dwelling subdivision. Also east is the Riverview Seniors Centre. Further east is the Caldwell Street Elementary School.

West: Directly abutting the property to the west is 292 Lake Avenue West, a two-storey single detached dwelling on a large lot with private services. Further west is the municipal boat launch, and Roy Brown Park. Further west is the Mississippi Shores development, which consists of 555 residential units in the form of a 78-unit apartment complex, single detached swellings, semi-detached dwellings, and townhouses.

South: Directly south of the property is open park space occupied by a large multi-purpose sports field and gravel running track

The property is designated Residential District in both the Official Plan and the Development Permit By-law. Lands designated Residential District are intended to be the main locations for housing, permitting a broad range of housing types.

WATER AND SANITARY SERVICES

Water service abutting the site includes a 300 mm watermain beneath Lake Avenue West.

A pressurized sanitary forcemain is located beneath Lake Avenue West and transfers sanitary flows upgrade from the Mississippi Shores subdivision pump station (located near the intersection of Lake Avenue West and O'Donnell Drive) to an existing manhole located east of the Lake Avenue West/Mississippi Road intersection. A forcemain, due to its pressurization, cannot accept gravity flows from abutting developments.

Town staff have confirmed that the closest sanitary connection point to the site is a 200 mm pipe beneath Lyndhurst Street, a single-loaded local street east of the property. The connection location is up grade of the property and will require a pump station to elevate sanitary from generated on the site to Mississippi Road, from where it can flow by gravity to the Lyndhurst Street connection.

2.2 Development Proposal

Escape Homes is proposing to subdivide the property into seven new parcels for residential development. Due to the number of proposed parcels a Plan of Subdivision was considered the most appropriate method of land division. The parcels have been sized to accommodate two detached dwellings, one semi-detached building (two units), and four fourplex buildings (16 units). The existing dwelling on the property will be demolished.

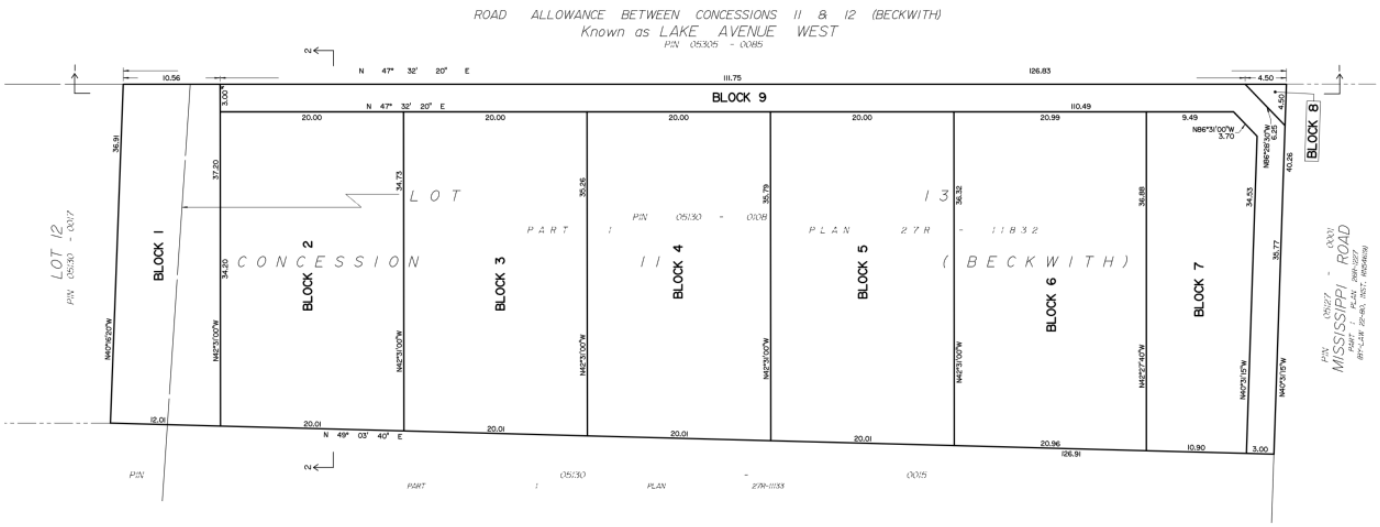


Figure 2: Excerpt of Draft Plan of Subdivision. The parcel would be divided into seven development Blocks.

Table 1: Summary of proposed Blocks and land uses.

Block	Proposed Use	Area	Notes
1	Detached dwelling	418 m^2	
2	Fourplex	689 m^2	Shared driveway with Lot C
3	Fourplex	670 m^2	Shared driveway with Lot B
4	Fourplex	711 m^2	Shared driveway with Lot E
5	Fourplex	721 m^2	Shared driveway with Lot D
6	Semi-detached dwelling	767 m^2	
7	Detached dwelling	423 m^2	
8	Corner sight triangle	10 m^2	Located at intersection of Lake Avenue West and Mississippi Road.
9	Common element block	574 m^2	Accommodate sanitary pipe and pump station

In addition to the Plan of Subdivision, a concurrent Plan of Condominium application has been submitted to facilitate establishment of a condominium corporation to oversee the sustainable maintenance and operation of private sanitary pipes and a pump station used to service the new development. As discussed in Section 2.1, sanitary flows generated from any development on the site will require collection and pumping in order to discharge to Lyndhurst Street. Staff have confirmed that the Town is unwilling to assume responsibility for such infrastructure and require a condominium be established for the purpose of collecting fees, overseeing maintenance, and managing benefitting parcel owners of the private sanitary system.

The common elements condominium will be established across Block 9, a strip of land abutting Lake Avenue West and Mississippi Road, allowing sanitary laterals to extend from the proposed building into a gravity sewer draining east, then south to a pump station at the southeast corner of the property. The seven development parcels will be considered parcels of tied land (POTL) to the common element condominium.

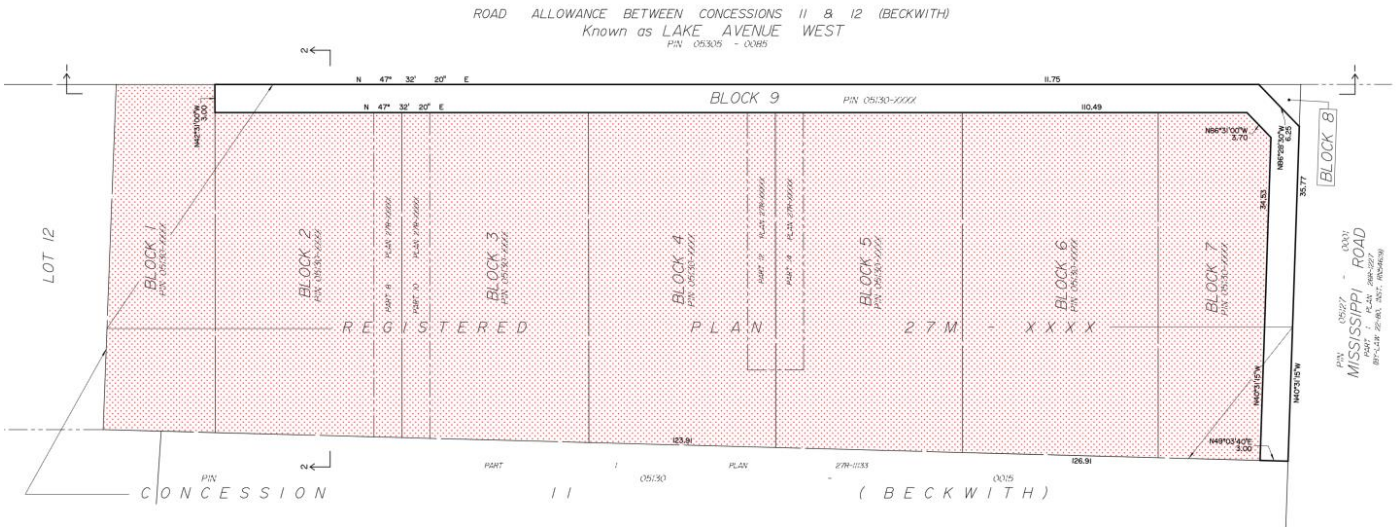


Figure 3: Excerpt from Plan of Condominium application. Blocks 1 to 7 (red stipple) are parcels of tied land (POTLs to the common element condominium over Block 9.

The building types have been arranged with lower density housing forms- detached and semi-detached dwellings, flanking the fourplex buildings; this configuration will allow for a transition in height from abutting one and two- storey detached dwellings to the taller (up to four storeys) fourplex buildings. Development of the parcels will proceed once the subdivision is registered and condominium established in accordance with the Towns Development Permit By-law provisions.

Policy 6.7.2 of the Town's Official Plan states that a Plan of Subdivision application is required for the creation of four or more new parcels. No new streets or parkland area are being proposed. A Plan of Condominium is proposed to manage the common elements of the properties (servicing) together as it provides a sustainable framework to maintenance of the sanitary services.

The proposed development provides an opportunity for gentle infilling of an underutilized parcel with a range of residential dwelling types and in proximity to a range of amenities, public service facilities, parks, and recreational opportunities.

STREET FRONTAGE AND SHARED DRIVEWAYS

The common element block (Block 9) directly abuts the public streets along most of the property's current frontage. As a result, Blocks 2 to 7 are not directly adjacent to a public right-of-way- a common requirement for lot creation as well as determination of Development Permit By-law provisions such as lot frontage, build-to lines, etc.

Blocks 2 to 7 will be identified as parcels of tied land (POTLs) to the common elements condominium over Block 9. As a result, all parcels without direct frontage on a public street will retain an interest in the interloping parcel. Such an arrangement is similar to common element condominiums with private streets: in such a case, the individual parcel would not directly abut a public street but has legal access by way of the common element from their property to a public street. Locating Block 9 abutting Lake Avenue West and Mississippi Street, as opposed to abutting the rear lot line, has multiple benefits:

- Ease of access for maintenance.
- A shorter lateral from the building to the sanitary pipe means pipes can be shallower (reducing construction and maintenance costs) and/or basements may be deeper (reducing the number of risers to the ground floor).
- Should sanitary pipes be installed in Lake Avenue West in the future, the private sanitary system can be abandoned, and existing laterals extended into the right-of-way.

Blocks 2 and 3, as well as Blocks 4 and 5, are proposed to have shared driveways to required vehicle parking in the rear yard. The hared driveways will make more efficient us of land and minimize the number of driveways crossing the sidewalk. In order to permit the shared driveways a series of reciprocal easements are proposed. More Specifically:

- Easement over part of Block 2 in favour of Block 3
- Easement over part of Block 3 in favour of Block 2
- Easement over part of Block 4 in favour of Block 5
- Easement over part of Block 5 in favour of Block 2

3 POLICY AND REGULATORY FRAMEWORK

3.1 Provincial Policy Statement

The Provincial Policy Statement (PPS) provides policy direction on planning matters for the Province of Ontario. This direction is for the planning of strong, sustainable, and resilient communities for all people, for clean and healthy environments, and for strong and competitive economies. Decisions affecting planning matters shall be consistent with the policies of the PPS.

The below review demonstrates that the proposed site plan is consistent with the applicable policies of the PPS.

Section 1.1.1 of the PPS states that healthy, liveable, and safe communities are sustained by:

(a) promoting efficient development and land use patterns which sustain the financial wellbeing of the Province and municipalities over the long term;
(b) accommodating an appropriate range and mix of residential (including second units, affordable housing and housing for older persons), employment (including industrial and commercial), institutional (including places of worship, cemeteries and long-term care homes), recreation, park and open space, and other uses to meet long-term needs;
(c) avoiding development and land use patterns which may cause environmental or public health and safety concerns;
(d) avoiding development and land use patterns that would prevent the efficient expansion of settlement areas in those areas which are adjacent or close to settlement areas;
(e) promoting cost-effective development patterns and standards to minimize land consumption and servicing costs;
(f) improving accessibility for persons with disabilities and older persons by identifying, preventing and removing land use barriers which restrict their full participation in society;
(g) ensuring that necessary infrastructure, electricity generation facilities and transmission and distribution systems, and public service facilities are or will be available to meet current and projected needs; and
(h) *promoting development and land use patterns that conserve biodiversity and consider the impacts of a changing climate.*

The proposal is located in a designated settlement area and designed to accommodation a mix of residential typologies. The proposed development makes efficient use of land and resources, limits servicing costs, and is located in an area already served by parks educational facilities, and a range of other amenities. Provisions of the existing Residential District designation will permit the development of a range of housing types in order to create complete and sustainable communities.

Section 1.1.3.2 a) states that land use patterns in settlement areas shall be based on densities and a mix of land uses which:

a. efficiently use land and resources;
b. are appropriate for, and efficiently use, the infrastructure and public service facilities which are planned or available, and avoid the need for their unjustified and/or uneconomical expansion;
c. minimize negative impacts to air quality and climate change, and promote energy efficiency;
d. support active transportation;

e. are transit-supportive, where transit is planned, exists or may be developed; and
f. are freight-supportive

The proposed development is consistent with Section 1.1.3.2 as it efficiently uses land and resources through utilizing existing land in an urban area to provide additional housing options. The proposed development utilizes existing infrastructure beneath Lake Avenue West (water and access) and Lyndhurst Street (sanitary).

Section 1.4.1 of the PPS states that planning authorities shall provide for an appropriate range and mix of housing options and densities required to meet projected requirements of current and future residents of the regional market area, and that such housing types and densities be directed towards lands that are suitably zoned and serviced to accommodate them. The proposed development will provide an appropriate range and mix of housing options and densities on parcels designated for residential development.

Section 1.4.3 of the PPS states that planning authorities shall provide for an appropriate range and mix of housing options and densities to meet projected market-based and affordable housing needs of current and future residents of the regional market area by: directing the development of new housing towards locations where appropriate levels of infrastructure and public service facilities are or will be available to support current and projected needs; and, promoting densities for new housing which efficiently use land, resources, infrastructure and public service facilities, and support the use of active transportation and transit in areas where it exists or is to be developed. The proposed development provides an appropriate range and mix of housing options and densities on an existing property with existing services.

Section 1.6.6 of the PPS states that infrastructure shall be provided in a coordinated, efficient, and cost-effective manner to accommodate projected needs. Section 1.6.6.2 states that:

> *"Municipal sewage services and municipal water services are the preferred form of servicing for settlement areas to support protection of the environment and minimize potential risks to human health and safety. Within settlement areas with existing municipal sewage services and municipal water services, intensification and redevelopment shall be promoted wherever feasible to optimize the use of the services"*

The proposed development will be serviced by municipal water from Lake Avenue West, whereas sanitary flows will be collected and pumped through a private network to discharge beneath Lyndhurst Street. The proposed servicing method is consistent with Policy 1.6.6.2 which states that full municipal services are considered the preferred method of servicing development. A Servicing and Stormwater Management Report prepared by Macintosh Perry demonstrates that the development can be adequately serviced, and is summarized in Section 4 of this rationale.

Section 2 of the PPS provides further policies related to the wise management of natural resources, summarized below.

- Section 2.1 (Natural Heritage) prohibits development or site alteration within natural heritage features such as provincially significant wetlands, woodlands, valleylands, wildlife habitat and

areas of natural and scientific interest unless there will be no negative impacts to natural features or functions. No natural heritage features are located on the property.

- Section 2.2 (Water) states development and site alteration shall be restricted near sensitive surface or groundwater features unless their hydrologic functions are protected, enhanced, or restored. No sensitive surface or groundwater features are located on the property.

- Section 2.3 (Agriculture) protects prime agricultural lands or specialty crop areas, from encroachment by incompatible uses. The property is not identified as prime agricultural land, nor within a specialty crop area.

- Section 2.4 (Minerals and Petroleum) prevents uses which could preclude or hinder the development of known or potential mineral or petroleum resources. There are no mineral or petroleum resources on or near the property.

- Section 2.5 (Mineral Aggregate Resources) protects mineral aggregate resources for long-term use. There are no known mineral aggregate resources on or near the property. The proposed development will not impact areas of mineral aggregate potential.

- Section 2.6 (Cultural Heritage and Archaeology) requires the conservation of significant built heritage resources, cultural heritage landscapes, and archaeological resources. A combined Stage I and II Archaeological Assessment was prepared by Past Recovery and summarized in Section 4 of this rationale. No archaeological resources of concern were recovered during the survey. The subject property has therefore been determined to retain no further cultural heritage value or interest and no further investigation is warranted.

Section 3.0 of the PPS provides policies related to reducing the potential public cost of, and protection of residents from, natural or human-made hazards.

- Section 3.1 (Natural Hazards) directs development to areas outside of hazardous lands, such as flooding or erosion hazards, dynamic beach hazards, or wildland fire hazards. The property is not located on lands impacted by hazardous sites, erosion and/or dynamic beach hazards, large inland lakes, or flooding hazards.

- Section 3.2 (Human-Made Hazards) requires appropriate mediation of human-made hazards such as mine hazards, oil, gas or salt hazards, or former resource extraction operations, prior to development on or abutting these lands. No mining, aggregate operation or petroleum resource operation hazards exist on or near the property.

The proposal is consistent with the policies of the Provincial Policy Statement.

3.2 County of Lanark Sustainable Communities Official Plan

The Lanark County Sustainable Communities Official Plan (SCOP) was adopted in June 2012 and received provincial approval in June 2013. The property is designated 'Settlement Areas' on Schedule A– Land Use Designations of the SCOP.

The SCOP contains policies which direct the Official Plans of lower-tier municipalities, such as the Town of Carleton Place. The SCOP provides a long-term vision, goals, and objectives for the Plan's boundaries. In Section 2 Settlement Policies, the intent of the policies is to create a framework which will encourage and support diversified, mixed-use development in settlement areas. This framework encourages development on the basis of full or partial municipal services and may identify planned population centres to be developed on the basis of sustainable private services.

The proposed applications are intended to subdivide the property while establishing a condominium corporation to oversee the operation and maintenance of infrastructure benefitting multiple parcels. The proposal will facilitate the use of underutilized residential lands within a designated settlement area and public service area.

Section 4.4 of the SCOP provides direction on the development and expansion of water, wastewater, and stormwater services.

- *Development will not be encouraged where such development would result in, or could lead to, unplanned expansions to existing water and wastewater infrastructures.*
- *Development shall generally be directed to communities which can reasonably provide or extend full water and wastewater services.*
- *The allocation of infrastructure capacity for infill and economic development purposes is encouraged.*

The proposed Part Lot Control and Condominium applications are located within an existing settlement area and will make use of existing municipal water, wastewater, and stormwater infrastructure available on and abutting the property.

Section 2.6.2.4 provides criteria for implementation of the SCOP by local planning authorities when creating policies and regulations or reviewing planning applications; these criteria have been adequately addressed through the previous plan of subdivision process. The proposed development is consistent with the intended use of these Blocks and compatible with existing infrastructure, abutting uses, and the character of the developing community.

Section 8.2.1 provides direction for the purposes of considering plan of subdivision applications. The following table provides a summary of plan of subdivision policies and demonstrates how the proposal addresses each.

Table 2: SCOP plan of subdivision policies review.

Policy	Comment
Section 8.2.1.1: Technical Considerations	
1. The application must be complete in accordance with the requirements of Section 51 (17) and applicable regulations under the Planning Act	• Required plans and studies will be provided to facilitate the Town and County's deeming of the applications adequate
2. The application must conform to the policies of this Plan and the local Official Plan; where an application does not conform to this Plan or the local Plan an Official Plan Amendment application(s) may be submitted concurrently	• Based on our review the proposal is consistent with the SCOP and Official Plan of the Town of Carleton Place
3. Consideration of local zoning and other regulations	• Based on our review the proposal conforms with the Town of Carleton Place Development Permit By-law.
4. Application of local and county development charges or servicing charge backs where applicable.	• Acknowledged.
8.2.1.2 Environmental Considerations	
1. Evidence respecting the availability and suitability of water and wastewater services including where appropriate the preparation of a hydrogeological study, terrain analysis and an impact assessment report in accordance with the Ministry of Environment guidelines and regulations	• The proposed development will proceed on full municipal services. A Servicing and Stormwater Management Report prepared by Macintosh Perry demonstrates the proposal can be accommodated by existing surrounding infrastructure.
2. Preparation of a servicing options statement	• See above.
3. Preparation of a preliminary stormwater management plan	• See above.
4. Completion of studies required under the Natural Heritage policies of this Plan as stated in section 5.0, studies required under the Resources policies of this Plan as stated in section 6.0 or studies required under the Public Health and Safety policies under section 7.0 of this Plan.	• The proposal is not affected by, nor will impact, natural heritage features, and; will not impact the ongoing or future development of resources within the County.
8.2.1.3 Planning and Design Considerations	
1. Lot and block configuration	• Configuration of Parts on the Plan of Subdivision are reflective of the provisions of the Residential designation in the Town's Development Permit By-law. Further discussion has been provided above on how the various parts will provide a sustainable framework for maintenance and stewardship of common elements.
2. Compatibility with adjacent uses	• The proposed residential uses are of similar use and form to surrounding dwellings to the east and west with proposed detached dwelling flanking the taller fourplex buildings to provide a transition to abutting dwellings. There are no surrounding uses that would be considered incompatible with the continued use of the property for residential purposes.
3. Road access, street layout and pedestrian amenities	• No new streets are proposed. Driveways are proposed to access Lake Avenue West.
4. Parks and open space amenities	• No new open space or parks are proposed as part of the applications; parkland dedication, or cash-in-

	lieu, was likely taken at the time of subdivision registration
5. Easement and right-of-way requirements	• Proposed new easements are summarized in Section 2.2 above.
6. In considering a draft plan of subdivision, regard shall be had to, among other matters, the criteria of Section 51 (24) of the Planning	• Considerations of Section 51(24) of the Act apply to plans of subdivision.
7. Emergency and secondary accesses	• There are no site constraints to providing emergency access
8. Additional considerations as may be required in local Official Plans.	• A review of other applicable policies of the SCOP have been provided above.

The proposed development maintains and promotes the policies in the SCOP.

3.3 Town of Carleton Place Official Plan

The Town of Carleton Place Official Plan (OP) is the cornerstone document essential for the management of future growth, development and change in the municipality. The OP provides the policy framework for guiding land use decisions within the Town's boundaries for the next 20 years. The OP was adopted in July 2013, with its most recent consolidation being in June 2021. The site is designated 'Residential District' on Schedule of the OP.

FIG-OP location

The property is designated Residential on Schedule A of the Official Plan; Section 3.5.1 provides objectives for development within the Residential designation:

- *To promote sustainable, efficient, and diverse residential neighbourhoods; and*
- *To provide a diverse range of housing types and densities.*

Residential uses of all density types are generally permitted in the Residential District per Section 3.5.2. The proposed development consists of a range of housing types. The provision of detached, semi-detached, and fourplexes contributes to efficient and diverse residential neighbourhoods.

Policy 3.5.3.1 notes that a range of dwelling types and densities are permitted including single detached, semi-detached, duplex dwellings, triplex dwellings, townhouse dwellings and apartment dwellings. The proposed dwelling types are permitted in the Residential designation.

Section 3.5.4 of the OP provides direction on density targets for new and infill development. Generally, the OP provides a target of 30 units per net hectare with a target density between 26 and 34 units per net hectare. Densities that exceed 34 units per net hectare may be considered for infill projects with areas less than three hectares; Policy 2 states that such development will be controlled through provisions of the Development Permit By-law.

Based on the current range of proposed dwelling types the project achieves a density of 21.4 units per net hectare (20 units ÷ 0.4892 ha_{net} = 40.9 units/ha_{net}); Policy 3.5.4.4 defines densities greater than 35 units per net hectare as high density.

Policy 3.5.4.5 provides criteria for the consideration and design of medium or high density residential development. The following table provides a summary of density policies and demonstrates how the proposal addresses each.

Table 3: Summary of Official Plan policies applicable to medium and high density development.

Policy	Comment
The proposed design of the residential development is compatible in scale with the character of surrounding uses	• The proposal proposes a gradual increase in building height as the distance increases from abutting residential dwellings. Detached and semi-detached dwellings up to two-storeys in height are proposed on the east and west of the site, with fourplexes up to four storeys in height located in the central four Blocks.
The site is physically suited to accommodate the proposed development	• The concept plan demonstrates that the proposed development, required parking, setbacks, and amenity areas can be accommodated on the proposed Blocks.
The proposed site can be serviced with adequate water and wastewater services	• The Servicing and Stormwater Management Report prepared by Macintosh Perry demonstrates that the site can be adequately serviced.
The property shall have appropriate access to an arterial or collector road maintained to a municipal standard with capacity to accommodate traffic generated from the site	• All Blocks will have access to Lake Avenue West, a collector road. The Transportation Brief prepared by Parsons demonstrates that there are no traffic capacity or safety concerns related to the proposed development
Sufficient off-street parking facilities is provided in accordance with the standards set out in the Development Permit By-law	• Sufficient space is available to accommodate minimum parking space requirements for the proposed development
The development can take place in accordance with the policies of Section 2.0.	• Detailed design and approval of individual buildings will be addressed through the subsequent Development Permit review process. The proposed parcel configuration provides a framework within which future development will advance the policies of Section 2.0 (Community Design Framework).

Section 2.3, General Design Policies, Policy 8, states that:

> "*Proposed development within an established neighbourhood shall be designed to function as an integral and complementary part of that area's existing development pattern by having regard for:*
> - *massing;*
> - *building height;*
> - *architectural proportion;*
> - *volumes of defined space;*
> - *lot size;*

- *position relative to the road; and*
- *building area to size area ratios*."

The proposed development respects the massing, building height, and setbacks provided by the Development Permit By-law for the respective proposed dwelling types. The layout of the proposed buildings has regard for the surrounding context by providing the lower density use adjacent to exiting dwellings to create a transition to the generally higher density fourplexes.

Section 4.3 of the Official Plan provides direction on the provision of built infrastructure such as roads, water, sanitary, and stormwater.

Section 4.3.5- Water, Wastewater and Stormwater Services states that all development shall generally occur on full municipal water and wastewater services. The property may be developed on full municipal services; the proposed common elements condominium will ensure that infrastructure not assumed by the Town will continue to be maintained and operated equitably among the benefitting parties.

Section 4.3.1.3 of the Official Plan is intended to provide further policy in support of the 2014 Rideau-Mississippi Source Protection Plan (SPP).

The SPP identifies the property within the Intake Protection Zone Scored 9 (IPZ9) area. Appendix B- Drinking Water Threat Circumstances of the SPP identifies prescribed drinking water threats and quantifies various circumstances by which such threats would be of concern. No existing or proposed uses on the land meet the threshold of being a drinking water threat. Potential activities on the site- such as salt application or snow storage, do not meet threshold under the summary of circumstances.

Section 6.7.1 provides considerations and criteria for the submission of a complete plan of subdivision application and are largely identical to those provided in the SCOP. Similar to discussion above regarding the SCOP, the plan of subdivision is consistent with the applicable policies. Section 4 of this rationale outlines an overview of the technical plans and studies. The proposed development advances the policies in the OP.

The proposed development is consistent with the policies of the Official Plan.

3.4 Development Permit By-law

The property is within the Residential District designation of Development Permit By-law 12-2015. The Residential District "applies to a number of different types of housing, from low density single dwellings to row dwellings to apartment buildings". The purpose and intent of the Residential District is to "promote compatible residential development within neighbourhoods".

The proposed development provides a range of housing densities in a low-rise built form, meeting the performance standards of the Residential District. The tables below outline the required performance standard and the provided performance standard for each proposed Block based on the proposed future dwelling type.

DETACHED DWELLING

PROVISION	Required	Provided Block 1	Provided Block 7
LOT AREA (MIN)	Nil	418 m^2	423 m^2
LOT COVERAGE (MAX)	80%	33 %	32 %
LOT FRONTAGE (MIN)	10.6 m	10.6 m	12.0 m
FRONT YARD BUILDIN WITHIN AREA	4.5-7.5 m	5.0 m*	5.0 m*
EXTERIOR SIDE YARD BUILD WITHIN AREA	4.5-7.5 m	N/A	5.1 m*
INTERIOR SIDE YARD (MIN)	1.2 m	1.2 m	1.2 m
REAR YARD DEPTH (MIN)	7.5 m	14.9 m	17.7 m
USEABLE LANDSCAPED OPEN SPACE IN THE REAR YARD (MIN)	50 m^2	173.5 m^2	199.9 m^2
BUILDING HEIGHT (MAX)	11 m	±7.5 m	±7.5 m
DWELLING UNIT AREA (MIN)	92.9 m^2	270 m^2	270 m^2
NO ENCROACHMENT AREA FROM FRONT LOT LINE	2.5 m	3.0 m*	3.0 m*
PARKING SPACES	2 per dwelling unit, one of which may be provided within the garage	2	2
DRIVEWAY (MAX)	45% of lot frontage	28 %	25 %
MAIN GARAGE FOUNDATION	6 m from the front lot line	6.7 m*	6.7 m*
NOTE: * SETBACK INCLUDES DISTANCE TO NEAREST ABUTTING STREET LINE.			

SEMI-DETACHED DWELLING

PROVISION	Required	Provided Block 6W	Provided Block 6E
LOT AREA (MIN)	Nil	415 m^2	351 m^2
LOT COVERAGE (MAX)	60%	34 %	40 %
LOT FRONTAGE (MIN)	7.5 m	11.4 m	9.6 m
FRONT YARD BUILDIN WITHIN AREA	4.5-7.5 m	5.0 m*	5.0 m*
INTERIOR SIDE YARD (MIN)	1.2 m	3.0 m	1.2 m
REAR YARD DEPTH (MIN)	7.5 m	16.8 m	16.8 m
USEABLE LANDSCAPED OPEN SPACE IN THE REAR YARD (MIN)	40 m^2	191 m^2	163 m^2

BUILDING HEIGHT (MAX)	11 m	±7.5 m	±7.5 m	
DWELLING UNIT AREA (MIN)	92.9 m^2	282 m^2	282 m^2	
NO ENCROACHMENT AREA FROM FRONT LOT LINE	2.5 m	3.0 m*	3.0 m*	
PARKING SPACES	2 per dwelling unit, one of which may be provided within the garage	2	2	
DRIVEWAMY (MAX)	50% of lot frontage	28 %	25 %	
MAIN GARAGE FOUNDATION	6 m from the front lot line	6.5 m*	6.5 m*	
NOTE: * SETBACK INCLUDES DISTANCE TO NEAREST ABUTTING STREET LINE.				

TRIPLEX AND QUADPLEX

PROVISION	Required	Provided Block 2	Provided Block 3	Provided Block 4	Provided Block 5
LOT AREA (MIN)	Nil	689 m^2	700 m^2	710 m^2	721 m^2
LOT COVERAGE (MAX)	60%	29 %	28 %	28 %	27 %
LOT FRONTAGE (MIN)	15 m	20 m	20 m	20 m	20 m
FRONT YARD BUILDIN WITHIN AREA	4.5-7.5 m	4.5 m*	4.5 m*	4.5 m*	4.5 m*
INTERIOR SIDE YARD (MIN)	1.2 m	1.2 m, 3.0 m	1.2 m, 3.0 m	1.2 m, 3.0 m	1.2 m, 3.0 m
REAR YARD DEPTH (MIN)	9 m	20.2 m	21.1 m	21.3 m	21.7 m
USEABLE LANDSCAPED OPEN SPACE IN THE REAR YARD (MIN)	30 m^2 per dwelling unit, total 120 m^2	219 m^2	226 m^2	163 m^2	173 m^2
BUILDING HEIGHT (MAX)	14m	±12 m	±12 m	±12 m	±12 m
NO ENCROACHMENT AREA FROM FRONT LOT LINE	2.5m	3.0 m*	3.0 m*	3.0 m*	3.0 m*
PARKING SPACES	1.25 per dwelling unit	5	5	5	5
VISITOR PARKING	min. 1 visitor parking space	1	1	1	1
NOTE: * SETBACK INCLUDES DISTANCE TO NEAREST ABUTTING STREET LINE.					

As discussed in Section 2.2 of this rationale, the creation of Block 9 to delineate the common elements condominium separates development Blocks 2 to 7 from having direct frontage on Lake Avenue West or Mississippi Road. Blocks 2 to 7 will retain an interest in Block 9 by being parcels of tied land (POTLs) to the common elements condominium. The circumstance is similar to that of common element condominiums with freehold parcels on private streets; the POTLs will maintain access over the common element condominium block with the effect of having direct access to Lake Avenue West. Block 9 will appear and function as a front yard for the parcels. Based on the comprehensive design of the proposal; the requirement to service the site by way of private sanitary services (as opposed to municipal infrastructure within the right-of-way); and continued interest of benefitting parcels in Block 9 by way of

the common elements condominium, it is appropriate to consider Blocks 2 to 7 to have frontage on a public street and review subsequent development accordingly.

The proposed parcels comply with applicable provisions of the Development Permit By-law.

4 OVERVIEW OF TECHNICAL STUDIES

4.1 Archaeological Assessment

A combined Stage I and II Archaeological Assessment was completed by Past Recovery Archaeological Services (8 July 2022, PR22-022) to determine whether the property retained archaeological potential. Initial historical, environmental, and archaeological research concluded that portions of the site possessed potential for pre and post-Contact archaeological resources.

A field assessment was completed on 29 June 29 2022n by means of a shovel test pit survey at five metre intervals across all parts of the site determined to retain archaeological potential. No archaeological resources of concern were recovered during the survey, and further investigation was not warranted. The assessment was entered into the public register by the Ministry of Tourism, Culture, and Sports (MTCS) on 19 July 2022.

4.2 Servicing and Stormwater Management Report

A Servicing and Stormwater Management Report was prepared by Macintosh Perry (8 February 2023, CCO-22-1448) to demonstrate how the proposed development could be accommodated with existing and proposed water, sanitary, and stormwater management infrastructure.

Water service will be provided by extending a new 38 mm diameter watermain from, and parallel to, the existing 300 mm watermain in Lake Avenue West; lateral connections will then be extended to each of the development Blocks.

Sanitary service will be collected by way of a private 200 mm gravity sewer located in Block 9. The proposed sanitary sewer will lead to a private pump station at the southeast corner of the site. From the pump station, a sanitary forcemain will then discharge to the 200 mm diameter sanitary stub located in the boulevard north of Lyndhurst Street.

Stormwater will be managed using several approaches:

- Deepening of the ditch along the south side of Lake Avenue west from west of the site to the Mississippi Road intersection. Deepening the roadside ditch will create a perimeter drainage system, which will direct site drainage towards the roadside ditch per existing conditions.
- Depressed stormwater areas are proposed to restrict stormwater and provide the necessary storage to meet pre-development flow rates.

- Runoff collected on the rooves of the proposed quadplexes will be stored and controlled internally using one roof drain per rooftop. The roof drain(s) will be used to limit the flow from the roof to the specified allowable release rate.

In no circumstances will stormwater runoff be directed onto any abutting properties.

4.3 Transportation Brief

A Transportation Brief was prepared by Parsons (11 May 2022, 478279-01000) for the proposed development. The brief concludes that the proposed development can be accommodated by the adjacent road network, with most travel demand over the project buildout timeline (to 2027) being generated by the Mississippi Shores subdivision development to the west. The intersection of Lake Avenue West and Mississippi Road will continue to operate at level of service (LOS) A at full buildout.

5 CONCLUSION

The proposed development for the subject site represents permitted residential uses and a desirable mix of housing options that will contribute to the area. This rationale has demonstrated that the proposed development is consistent with the Provincial Policy Statement, conforms to the Official Plan, and has been designed respecting the relevant guidelines.

As demonstrated by this report and other technical submissions included with the required application, which are to be read in conjunction with this report, the proposal represents an appropriate development that will fit and work well on the site and within the surrounding context.

It is our opinion that proposed development represents good land use planning and is a positive addition to the area.

Respectfully,

Eric A. Bays MCIP, RPP
Senior Planner
Stantec Consulting Ltd.

APPENDICES

Scale 1 : 250

10 7.5 5.0 2.5 0 5 10 Metres

Metric

DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

Notes & Legend

	Denotes	
MF	-	Metal Fence
CLF	-	Chain Link Fence
LS	-	Light Standard
WRW	-	Wooden Retaining Wall
CRW	-	Concrete Retaining Wall
x 89.00	-	Existing Elevations

ELEVATION NOTES

1. Elevations shown are geodetic and are referred to the CGVD28 geodetic datum.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

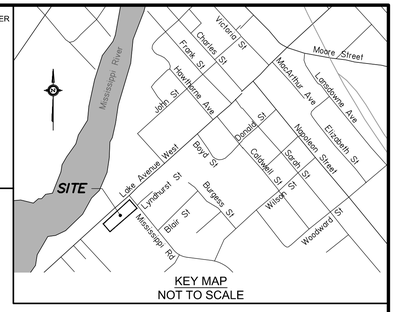
Distances shown on this plan are ground distances and can be converted to grid distances by multiplying by the combined scale factor of 0.99991.

Bearings are grid, derived from the southerly limit of Lake Avenue West shown to be N47°32'20"E on Plan 27R-11832 and are referenced to MTM Zone 9 (76°30' West Longitude) NAD-83 (CSRS)(2010).

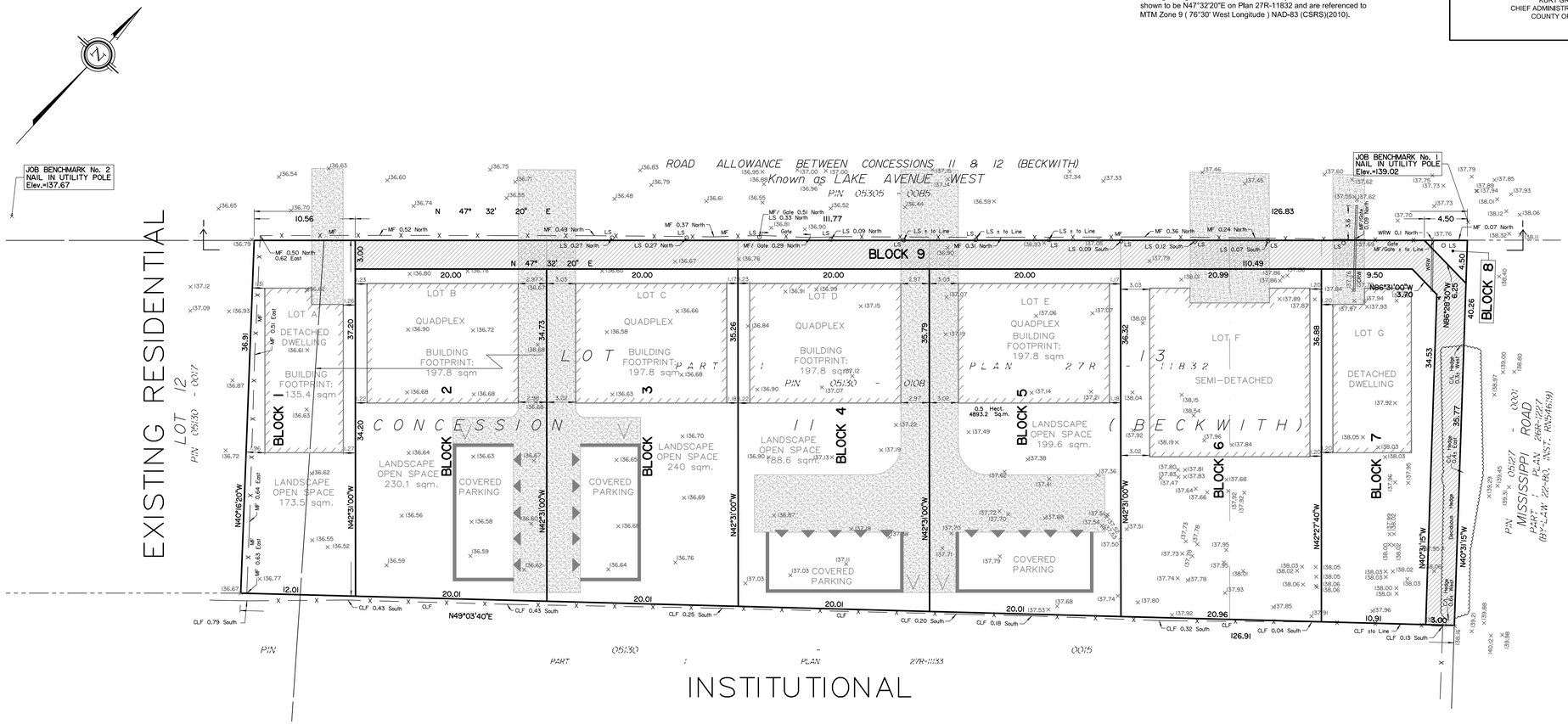
SUBJECT TO THE CONDITIONS, IF ANY, SET FORTH IN OUR LETTER DATED _____.

THIS DRAFT PLAN IS APPROVED BY THE COUNTY OF LANARK UNDER SECTION 51 OF THE PLANNING ACT.
THIS ____ DAY OF _____, 20__.

_____
KURT GREAVES
CHIEF ADMINISTRATIVE OFFICER
COUNTY OF LANARK



KEY MAP
NOT TO SCALE



AREA SCHEDULE

BLOCK	Square Metres
1	418
2	689
3	700
4	711
5	721
6	767
7	424
8	10
9	453
TOTAL	4893

DRAFT PLAN OF SUBDIVISION OF
PART OF LOTS 12 AND 13
CONCESSION 11
Geographic Township of Beckwith
TOWN OF CARLETON PLACE
COUNTY OF LANARK

Prepared by Annis , O'Sullivan , Vollebekk Ltd.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :
The boundaries of the lands to be subdivided and their relationship to adjoining lands have been accurately and correctly shown.

_____ Date

_____ Andrew J. Broxham
Ontario Land Surveyor

OWNER'S CERTIFICATE

This is to certify that we are the owners of the lands to be subdivided and that this plan was prepared in accordance with our instructions.

_____ Date _____ Nathan Adams

_____ Date _____ Tammy Adams

_____ Date _____ Anne Winch

We have authority to bind the corporation.

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51-17 OF THE PLANNING ACT

(a) see plan
(b) see plan
(c) see plan
(d) see plan
(e) see plan
(f) see plan
(g) see plan
(h) Development will be supplied with full municipal piped water service
(i) see soils report
(j) see plan
(k) sanitary, storm sewers, municipal water, bell, hydro, cable and gas to be available
(l) see plan

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079
Email: Nepean@aovltd.com
Ontario Land Surveyors

Job No. 17446-21 EHC PILI I2 C II BE DPS D2 AP

BOUNDARY INFORMATION COMPILED FROM REGISTERED PLAN 27M-XXXX

ELEVATION NOTES

1. Elevations shown are geodetic and are referred to the CGVD28 geodetic datum.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

Notes & Legend

MF	Denotes	Metal Fence
CLF	-	Chain Link Fence
O LS	-	Light Standard
WRW	-	Wooden Retaining Wall
CRW	-	Concrete Retaining Wall
x 89.00	-	Existing Elevations

Scale 1 : 250

10 7.5 5.0 2.5 0 5 10 Metres

Metric

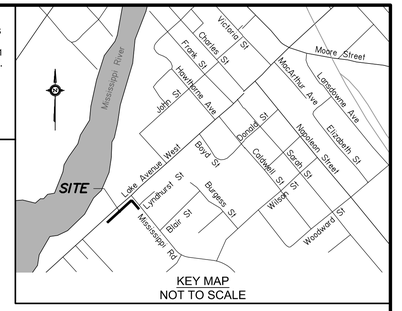
DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

Distances shown on this plan are ground distances and can be converted to grid distances by multiplying by the combined scale factor of 0.99991.

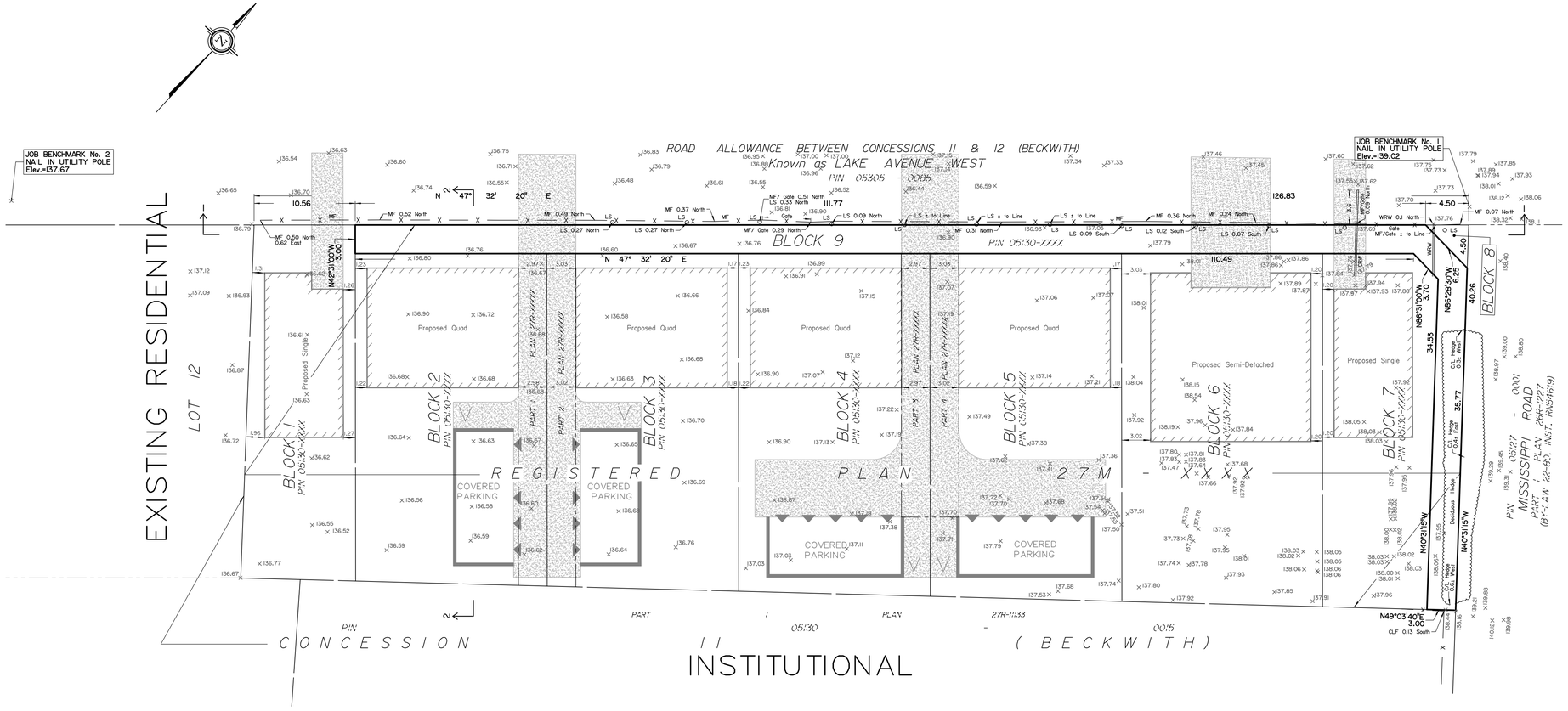
Bearings are grid, derived from the southerly limit of Lake Avenue West shown to be N47°32'20"E on Registered Plan 27M-XXXX and are referenced to MTM Zone 9 (76°30' West Longitude) NAD-83 (CSRS)(2010).

SUBJECT TO CONDITIONS, IF ANY, SET FORTH IN OUR LETTER DATED _____2023. THIS DRAFT PLAN IS APPROVED BY THE COUNTY OF LANARK UNDER SECTION 9 OF THE CONDOMINIUM ACT AND SECTION 51 OF THE PLANNING ACT THIS _____ DAY OF _____, 2023.

_____
KURT GRAVES
CHIEF ADMINISTRATIVE OFFICER
COUNTY OF LANARK



KEY MAP
NOT TO SCALE



DRAFT PLAN OF COMMON ELEMENTS CONDOMINIUM OF
BLOCK 9
REGISTERED PLAN 27M-XXXX
TOWN OF CARLETON PLACE
COUNTY OF LANARK

Prepared by Annis , O'Sullivan , Vollebekk Ltd.

Surveyor's Certificate

I CERTIFY THAT the boundaries of the Lands to be subdivided and their relationship to the adjacent lands are accurately and correctly shown.

_____ Date

_____
V. Andrew Shelp
Ontario Land Surveyor

Owner's Certificate

This is to certify that I am the owners / agent of the lands to be subdivided and that this plan was prepared in accordance my instructions.

_____ Date

_____
Nathan Adams

_____ Date

_____
Tammy Adams

_____ Date

_____
Anne Winch

We have authority to bind the corporation.

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51 (17) OF THE PLANNING ACT.

(a) See Plan (Boundaries)
(b) See Plan (Highways)
(c) See Plan (Key Plan)
(d) See Plan
(e) See Plan (Adjoining Lands)
(f) See Plan
(g) See Plan (Features)
(h) Municipal Water System Available
(i) See Soils Report
(j) See Plan (Elevations)
(k) All Municipal Services Available (Hydro, Sewage & Telephone)
(l) See Plan (Easements)

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
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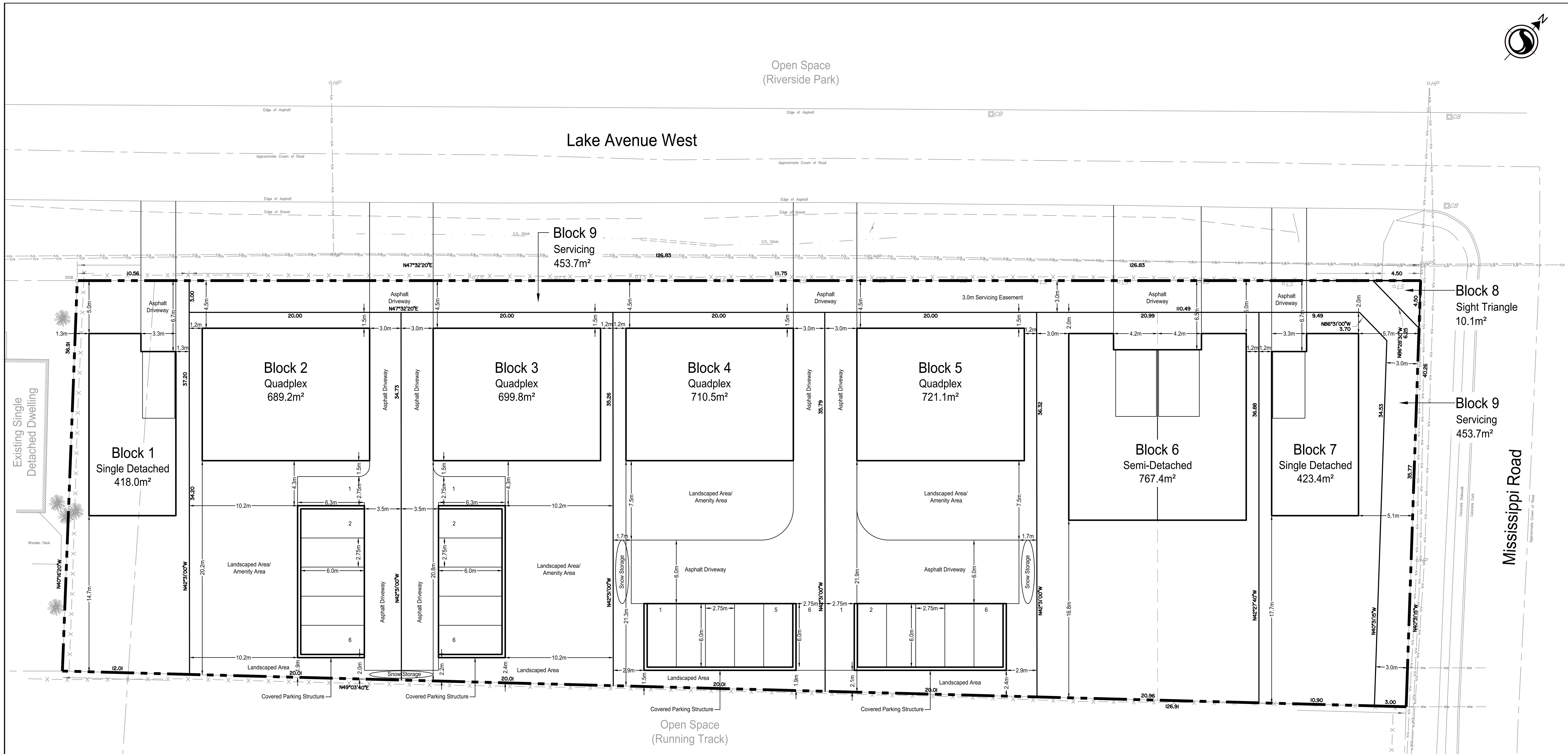
Ontario Land Surveyors

Job No. 17446-21 EHC PILI I2 C II BE DPCEC D2 AP



Stantec Consulting Ltd.
100-300 Hagey Boulevard
Waterloo ON N2L 0A4
Tel: (519) 579-4410
www.stantec.com

Key Map NTS.

Legal Description

Part of Lots 12 and 13,
Concession 11,
Town of Carleton Place,
County of Lanark

Details of Development

SITE DETAILS		REQUIRED	BLOCK 1 - PROVIDED	BLOCK 7 - PROVIDED
ZONING	RESIDENTIAL DISTRICT - SINGLE DETACHED DWELLING			
MINIMUM LOT AREA		NIL	418.0m²	423.4m²
MAXIMUM LOT COVERAGE		60.0%	32.4%	32.0%
MINIMUM LOT FRONTAGE		10.6m	10.5m	11.4m
FRONT YARD BUILD WITHIN AREA		MINIMUM = 4.5m MAXIMUM = 7.5m	5.0m	5.0m
EXTERIOR SIDE YARD BUILD WITHIN AREA		MINIMUM = 4.5m MAXIMUM = 7.5m	N/A	5.1m
MINIMUM INTERIOR SIDE YARD		1.2m	1.3m & 1.3m	1.2m
MINIMUM REAR YARD DEPTH		7.5m	14.7m	17.7m
MINIMUM USABLE LANDSCAPED OPEN SPACE IN THE REAR YARD		50.0m²	173.9m²	253.8m²
MAXIMUM BUILDING HEIGHT		11.0m	<11.0m	<11.0m
MINIMUM DWELLING UNIT AREA		92.9m²	135.4m²	135.4m²
NO ENCROACHMENT AREA FROM FRONT OR EXTERIOR SIDE LOT LINE		2.5m	2.5m	2.5m
PARKING SPACE		2 SPACES	2 SPACES	2 SPACES
MAXIMUM GARAGE WIDTH		50.0% OF LOT FRONTAGE	31.4%	28.9%
MINIMUM MAIN GARAGE FOUNDATION SETBACK		6.0m	6.7m	6.7m

Parking Calculation

SINGLE DETACHED DWELLING:
2 SPACES PER UNIT
1 UNIT x 2 SPACES = 2 SPACES

Details of Development

SITE DETAILS		REQUIRED	BLOCK 2 - PROVIDED	BLOCK 3 - PROVIDED	BLOCK 4- PROVIDED	BLOCK 5 - PROVIDED
ZONING	RESIDENTIAL DISTRICT - QUADPLEX					
MINIMUM LOT AREA		NIL	689.2m²	699.8m²	710.5m²	721.1m²
MAXIMUM LOT COVERAGE		60.0%	28.7%	28.2%	27.8%	27.4%
MINIMUM LOT FRONTAGE		15.0m	20.0m	20.0m	20.0m	20.0m
FRONT YARD BUILD WITHIN AREA		MINIMUM = 4.5m MAXIMUM = 7.5m	4.5m	4.5m	4.5m	4.5m
EXTERIOR SIDE YARD BUILD WITHIN AREA		MINIMUM = 4.5m MAXIMUM = 7.5m	N/A	N/A	N/A	N/A
MINIMUM INTERIOR SIDE YARD		1.2m	1.2m & 3.0m	1.2m & 3.0m	1.2m & 3.0m	1.2m & 3.0m
MINIMUM REAR YARD DEPTH		9.0m	20.2m	20.8m	21.3m	21.9m
MINIMUM USABLE LANDSCAPED OPEN SPACE IN THE REAR YARD		30.0m²	107.9m²	107.9m²	125.5m²	125.5m²
MAXIMUM BUILDING HEIGHT		14.0m	<14.0m	<14.0m	<14.0m	<14.0m
NO ENCROACHMENT AREA FROM FRONT OR EXTERIOR SIDE LOT LINE		2.5m	2.5m	2.5m	2.5m	2.5m
PARKING SPACE		6 SPACES	6 SPACES	6 SPACES	6 SPACES	6 SPACES
VISITOR PARKING SPACE		1 SPACES	1 SPACES	1 SPACES	1 SPACES	1 SPACES

Parking Calculation

QUADPLEX:
1.25 SPACES PER UNIT
4 UNITS x 1.25 SPACES = 5 SPACES

VISITOR PARKING:
0.25 SPACE PER UNIT
4 UNITS x 0.25 SPACES = 1 SPACE

Details of Development

SITE DETAILS		REQUIRED	BLOCK 6 - PROVIDED
ZONING	RESIDENTIAL DISTRICT - SEMI-DETACHED		
MINIMUM LOT AREA		NIL	767.4m²
MAXIMUM LOT COVERAGE		60.0%	36.8%
MINIMUM LOT FRONTAGE		15.0m (7.5m/UNIT)	21.0m
FRONT YARD BUILD WITHIN AREA		MINIMUM = 4.5m MAXIMUM = 7.5m	5.0m
EXTERIOR SIDE YARD BUILD WITHIN AREA		MINIMUM = 4.5m MAXIMUM = 7.5m	N/A
MINIMUM INTERIOR SIDE YARD		1.2m	3.0m & 1.2m
MINIMUM REAR YARD DEPTH		7.5m	16.8m
MINIMUM USABLE LANDSCAPED OPEN SPACE IN THE REAR YARD		40.0m²	355.6m²
MAXIMUM BUILDING HEIGHT		11.0m	<11.0m
MINIMUM DWELLING UNIT AREA		92.9m²	282.5m²
NO ENCROACHMENT AREA FROM FRONT OR EXTERIOR SIDE LOT LINE		2.5m	2.5m
PARKING SPACE		2 SPACES	2 SPACES
MAXIMUM GARAGE WIDTH			40.0%
MINIMUM MAIN GARAGE FOUNDATION SETBACK			6.5m

Parking Calculation

SINGLE DETACHED DWELLING:
2 SPACES PER UNIT
1 UNIT x 2 SPACES = 2 SPACES

	Revision	By	Appd	YYYY.MM.DD
4.	REVISED AS PER TOWNSHIP COMMENTS	JJ	EB	2023.12.07
3.	REVISED AS PER REVISED DRAFT PLAN	JJ	ED	2023.07.27
2.	REVISED AS PER CLIENT COMMENTS	JJ	EB	2023.01.27
1.	REVISED AS PER CLIENT COMMENTS	JJ	EB	2022.09.19
	ISSUED FOR CLIENT REVIEW	JJ	EB	2022.08.30

File Name: 160410347_R-SP	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
	JJ	JJ	EB	2022.08.29

Permit-Seal

Client/Project

ESCAPE HOMES

254 LAKE AVENUE WEST

CARLETON PLACE, ON

Title

SITE PLAN

Project No. 160410347

Scale 1:200

Revision 4

Sheet 1 of 1

Drawing No. SP-1

ORIGINAL SHEET - ARCH D

I REQUIRE THIS PLAN TO BE DEPOSITED UNDER THE LAND TITLES ACT.

DATE:_____

_____

ANDREW J. BROXHAM
ONTARIO LAND SURVEYOR

PLAN 27R-

RECEIVED AND DEPOSITED

DATE:_____

_____

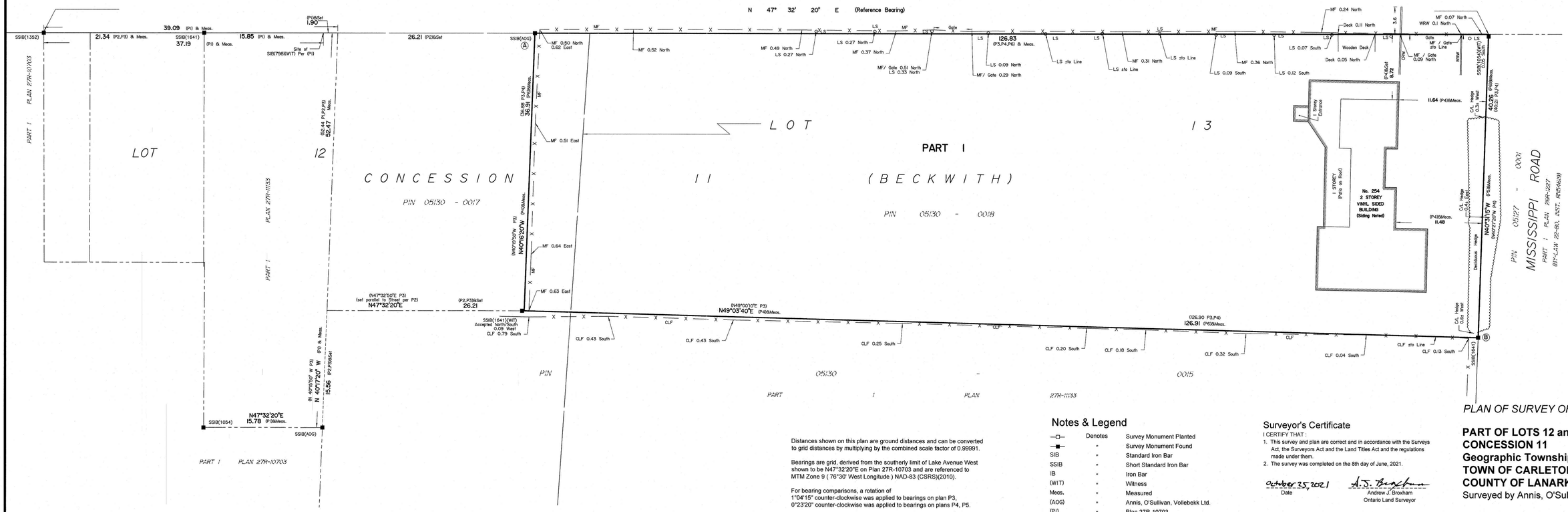
REPRESENTATIVE FOR LAND REGISTRAR FOR THE LAND TITLES DIVISION OF LANARK NO. 27.

SCHEDULE

AREA (Sq.m.)	PART	LOT	CONCESSION	PIN
4892.3	1	PART OF 12 & 13	11	ALL OF 05130-0018

ROAD ALLOWANCE BETWEEN CONCESSIONS II & I2 (BECKWITH)
Known as LAKE AVENUE WEST

PIN 05305 - 0085



Distances shown on this plan are ground distances and can be converted to grid distances by multiplying by the combined scale factor of 0.99991.

Bearings are grid, derived from the southerly limit of Lake Avenue West shown to be N47°32'20"E on Plan 27R-10703 and are referenced to MTM Zone 9 (76°30' West Longitude) NAD-83 (CSRS)(2010).

For bearing comparisons, a rotation of 1°04'15" counter-clockwise was applied to bearings on plan P3, 0°23'20" counter-clockwise was applied to bearings on plans P4, P5.

Coordinates are derived from Can-Net 2016 Real Time Network GPS observations and are referred to the Central Meridian of MTM Zone 9 NAD-83 (CSRS) (2010).

Coordinate values are to urban accuracy in accordance with O. Reg. 216/10.

. Point A Northing 4999102.74 Easting 332289.77
. Point B Northing 4999157.74 Easting 332409.49

Caution: Coordinates cannot, in themselves, be used to re-establish corners or boundaries shown on this plan.

Notes & Legend

	Denotes	
—□—	"	Survey Monument Planted
—■—	"	Survey Monument Found
SIB	"	Standard Iron Bar
SSIB	"	Short Standard Iron Bar
IB	"	Iron Bar
(WIT)	"	Witness
Meas.	"	Measured
(AOG)	"	Annis, O'Sullivan, Vollebekk Ltd.
(P1)	"	Plan 27R-10703
(P2)	"	Plan 26R-591
(P3)	"	Plan 27R-11133
(P4)	"	(1326) Plan November 24, 1983
(P5)	"	Plan 26R-1227
(P6)	"	(AOG) Plan June 21, 2021
MF	"	Metal Fence
CLF	"	Chain Link Fence
O LS	"	Light Standard
WRW	"	Wooden Retaining Wall
CRW	"	Concrete Retaining Wall

Surveyor's Certificate

I CERTIFY THAT :

1. This survey and plan are correct and in accordance with the Surveys Act, the Surveyors Act and the Land Titles Act and the regulations made under them.
2. The survey was completed on the 8th day of June, 2021.

October 25, 2021
Date

A.J. Broxham
Andrew J. Broxham
Ontario Land Surveyor

PLAN OF SURVEY OF

PART OF LOTS 12 and 13
CONCESSION 11
Geographic Township of Beckwith
TOWN OF CARLETON PLACE
COUNTY OF LANARK

Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 250

10 7.5 5.0 2.5 0 5 10 Metres

Metric

DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079
Email: Nepean@aovltd.com
Ontario Land Surveyors

Job No. I7446-21 EHC PIL1 I2 C II BE R DI

STAGE 1 AND 2 ARCHAEOLOGICAL ASSESSMENTS
FOR A PROPOSED SEVERANCE
254 LAKE AVENUE WEST
PART LOT 13, CONCESSION 11
GEOGRAPHIC TOWNSHIP OF BECKWITH
NOW TOWN OF CARLETON PLACE
COUNTY OF LANARK, ONTARIO

Past Recovery
Archaeological Services Inc.

STAGE 1 AND 2 ARCHAEOLOGICAL ASSESSMENTS FOR A PROPOSED SEVERANCE, 254 LAKE AVENUE WEST, PART LOT 13, CONCESSION 11, GEOGRAPHIC TOWNSHIP OF BECKWITH, NOW TOWN OF CARLETON PLACE, COUNTY OF LANARK, ONTARIO

Prepared for:	Nathan Adams Escape Homes Consulting 115 Blackberry Way Dunrobin, ON K0A 1T0 Phone: (613) 612-6454 Email: escapehomesconsulting@gmail.com
Re:	Severance Application (*Planning Act)*
Prepared by:	Past Recovery Archaeological Services Inc. 99c, Unit 1 Dufferin Street Perth, ON K7H 3A5 Phone: (613) 267-7028 Email: pras@pastrecovery.com
Project No.:	PR22-022
Licensee:	Stephanie Cleland, M.A., Licence P1201 Staff Archaeologist Past Recovery Archaeological Services Inc.
P.I.F. No.:	P1201-0137-2022
Date:	July 8th, 2022 Original Report

ACKNOWLEDGMENTS

Nathan Adams, Escape Homes Consulting, provided project mapping, background information and logistical assistance.

PROJECT PERSONNEL

Project Manager	Jeff Earl, M.Soc.Sc.
Licence Holder	Stephanie Cleland, M.A. (P1201)
Stage 1 Site Visit	Jessalyn Miller, M.A. (R1111) Sara Lavigne, M.A.
Stage 2 Field Director	Jessalyn Miller (R1111)
Assistant Field Director	Sara Lavigne
Field Crew	Whitney Moyle-Last, B.A.
Background Research	Sara Lavigne Morgan Ward, B.A. Trevor Hockney, B.A.
Report Writing	Sara Lavigne Morgan Ward Trevor Hockney
Report GIS/Drafting	Liam McGeer, M.A. (R1268) Sara Lavigne
Report Review	Jeff Earl

EXECUTIVE SUMMARY

Past Recovery Archaeological Services Inc. was retained by Escape Homes Consulting to undertake Stage 1 and 2 archaeological assessments in support of proposed Severance Application for a residential development project prepared as per requirements under the *Planning Act.* The subject property was located on part of Lot 13, Concession 11 of the geographic Township of Beckwith, now in the Town of Carleton Place, County of Lanark (see Maps 1 to 3). The area covered by the proposed development permit was approximately 0.49 hectares (1.22 acres) in size.

The purpose of the Stage 1 investigation was to evaluate the archaeological potential of the study area and present recommendations for the mitigation of any significant known or potential archaeological resources. To this end, historical, environmental and archaeological research was conducted in order to make a determination of archaeological potential. Additionally, a site visit was conducted on May 16th, 2022. The results of this study indicated that portions of the subject property possessed potential for pre-Contact and post-Contact archaeological resources (see Map 7).

The purpose of the Stage 2 assessment was to determine whether or not the property contained archaeological resources requiring further assessment, and if so to recommend an appropriate Stage 3 assessment strategy. The assessment was completed on June 29th, 2022, by means of a shovel test pit survey at five metre intervals across all parts of the study area determined to retain archaeological potential. No archaeological resources of concern were recovered during the survey. The subject property has therefore been determined to retain no further cultural heritage value or interest (CHVI).

The results of the Stage 2 property survey documented in this report form the basis for the following recommendations:

1) There are no further archaeological concerns for the study area as illustrated on Map 8.

2) In the event that future planning results in the identification of additional areas of impact beyond the limits of the present Stage 2 study area, further Stage 2 archaeological assessment may be required. It should be noted that impacts include all aspects of the proposed development causing soil disturbances or other alterations, including additional temporary property needs (i.e. access roads, staging/lay down areas, associated works etc.).

3) Any future Stage 2 archaeological assessment should be undertaken by a licensed consultant archaeologist, in compliance with *Standards and Guidelines for Consultant Archaeologists* (MTCS 2011).

The following recommendation has been included as per a request from the Algonquins of Ontario:

4) Since the potential always exists to miss important information in archaeological surveys, if any artifacts of Indigenous interest or human remains are encountered during the development of the subject property, please contact: Algonquins of Ontario Consultation Office, 31 Riverside Drive, Suite 101, Pembroke, ON, K8A 8R6; Tel: 613-735-3759; Fax: 613-735-6307; Email: algonquins@tanakiwin.com.

The reader is also referred to Section 7.0 below to ensure compliance with relevant provincial legislation and regulations as may relate to this project.

TABLE OF CONTENTS

TABLE OF CONTENTS *Continued*

Page No.

LIST OF MAPS

LIST OF IMAGES

LIST OF IMAGES *Continued*

LIST OF TABLES

1.0 INTRODUCTION

Past Recovery Archaeological Services Inc. was retained by Escape Homes Consulting to undertake Stage 1 and 2 archaeological assessments in support of a proposed Severance Application for a residential development project prepared as per requirements under the *Planning Act.* The subject property was located on part of Lot 13, Concession 11 of the geographic Township of Beckwith, now in the Town of Carleton Place, County of Lanark (Map 1 to 3).

The objectives of the Stage 1 archaeological assessment were as follows:

- To provide information concerning the geography, history, previous archaeological fieldwork and current land condition of the study area;
- To evaluate the potential for the subject property to contain significant archaeological resources; and,
- To recommend appropriate strategies for Stage 2 archaeological assessment in the event further assessment is warranted.

The objectives of the Stage 2 archaeological assessment were as follows:

- To document all archaeological resources on the property;
- To determine whether the property contains archaeological resources requiring further assessment; and,
- In the event that an archaeological site requiring further assessment is discovered, to recommend an appropriate Stage 3 assessment strategy.

2.0 PROJECT CONTEXT

This section of the report provides the context for the archaeological work undertaken, including a description of the study area, the related legislation or directives triggering the assessment, any additional development-related information, the confirmation of permission to access the study area for the purposes of the assessment, and an acknowledgement of Indigenous territorial rights and interests.

2.1 Property Description

The subject property was located in the northwest corner of Lot 13, Concession 11 of the geographic Township of Beckwith, now part of the Town of Carleton Place, and consisted of approximately 0.49 hectares (1.22 acres) of land containing a grassy field edged by deciduous trees, with an extant residence on the easternmost portion (see Maps 1 and 2). The property was bordered to the west by another extant residence, to the north by Lake Avenue West, to the east by Mississippi Road, and to the south by a large open sports field. The study area was approximately 100 metres southwest of the Mississippi River, with the waterfront space between the study area and the river currently part of a public park.

2.2 Development Context

Escape Homes Consulting is preparing a Severance Application for a residential development project within the study area, which as noted above consists of approximately 0.49 hectares (1.22 acres) of residential infrastructure and lawn (see Map 2). The parcel being developed amounts to 0.35 hectares (0.87 acres), excluding the area around the extant house which is to be retained. The proposed development will include four quadplex buildings, with four covered parking structures behind, as well as one detached dwelling. Given the proximity of the Mississippi River, archaeological assessment was listed by the Town of Carleton Place as a requirement for approval of the Severance Application. Past Recovery was retained to complete this work.

2.3 Access Permission

Permission to access the subject property and complete all aspects of the archaeological assessment, including photography and the collection of artifacts, was granted by Escape Homes Consulting.

2.4 Territorial Acknowledgement

The study area falls within the traditional territory of the Anishinaabeg and forms part of the Algonquins of Ontario (AOO) Settlement Area set out by the current Agreement-in-

Principle between the AOO and the federal and provincial governments, signed in 2016.[1] The study area also lies within an area of interest of the Huron Wendat Nation and of the Williams Treaties First Nations as signatories of the Crawford Purchases.

[1] The Algonquins of Ontario are composed of ten communities: The Algonquins of Pikwakanagan First Nation, Antoine, Kijicho Manito Madaouskarini (Bancroft), Bonnechere, Greater Golden Lake, Mattawa/North Bay, Ottawa, Shabot Obaadjiwan (Sharbot Lake), Snimikobi (Ardoch), Whitney and Area. Federally unrecognized Algonquin communities, including Ardoch First Nation, also live in the territory but do not form part of the AOO (see Lawrence 2012). The Agreement-In-Principle is between the Algonquins of Ontario and the Governments of Ontario and Canada. Algonquins have sought recognition and protection of their traditional territory dating back to 1772 and in 1983 the Algonquins of Pikwàkanagàn First Nation (previously Algonquins of Golden Lake) formally submitted a petition to the Government of Canada, and in 1985 to the Government of Ontario. The claim was accepted for negotiations in 1991 and 1992, an Agreement-In-Principle was signed in 2016, and negotiations are on-going. For further information see www.tanakiwin.com.

3.0 HISTORICAL CONTEXT

This section of the report is comprised of an overview of human settlement in the region using information derived from background historical research. The purpose of this research is to describe the known settlement history of the local area, with the intention of providing a context for the evaluation of known and potential archaeological sites, as well as a review of property-specific information presenting a record of settlement and land use history.

3.1 Regional Pre-Contact Cultural Overview

While our understanding of the pre-Contact sequence of human activity in the region is limited, it is possible to provide a general outline of pre-Contact occupation based on archaeological, historical, and environmental research conducted across what is now eastern Ontario.[2] Archaeologists divide the long sequence of Indigenous occupation into both temporal periods and regional groups based primarily on the presence and/or style of various artifact types. While this provides a means of discussing the past, it is an archaeological construct and interpretation based only on a few surviving artifact types; it does not reflect the generally gradual nature of change over time, nor the complexities of interactions between different Indigenous groups. It also does not reflect Indigenous world views and histories as detailed in the oral traditions of Indigenous communities who have long-standing relationships with the land. The following summary uses the generally accepted archaeological chronology for the pre-Contac period while recognizing its limitations.

Across the region, glaciers began to retreat around 15,000 years ago (Munson 2013:1). The earliest human occupation of Ontario began approximately 13,500 before present (B.P.) with the arrival of small groups of hunter-gatherers referred to by archaeologists as Palaeo-Indians (Ellis 2013:35). These groups gradually moved northward as the glaciers and glacial lakes retreated. While very little is known about their lifestyle, it is likely that Palaeo-Indian groups travelled widely relying on the seasonal migration of caribou as well as small animals and wild plants for subsistence in a sub-arctic environment. They produced a variety of distinctive stone tools including fluted projectile points, scrapers, burins and gravers. Their sites are rare, and most are quite small (Ellis 2013:35-36). Palaeo-Indian peoples tended to camp along shorelines, and because of the changing environment, many of these areas are now inland. Indigenous settlement of much of eastern Ontario was late in comparison to other parts of Ontario as a result of the high-water levels associated with glacial Lake Algonquin, the early stages of glacial Lake Iroquois and the St. Lawrence Marine Embayment of the post-glacial Champlain Sea (Hough 1958:204). In eastern Ontario, the old shoreline ridges of Lake Algonquin, Lake

[2] Current common place names are used throughout this report while recognizing that the many Indigenous peoples who have lived in the region for thousands of years had, and often maintain, their own names for these places and natural features.

Iroquois, the Champlain Sea and of the emergent St. Lawrence and Ottawa river channels and their tributaries would be the most likely areas to find evidence of Palaeo-Indian occupation (see AOO 2017; Ellis 2013; Ellis and Deller 1990; Watson 1999).

During the succeeding Archaic period (c. 10,000 to c. 3,000 B.P.), the environment of the region approached modern conditions and more land became available for occupation as water levels in the glacial lakes dropped. Populations continued to follow a mobile hunter-gatherer subsistence strategy, although there appears to have been a greater reliance on fishing and gathered food (e.g. plants and nuts) and more diversity between regional groups. The tool kit also became increasingly diversified, reflecting an adaptation to environmental conditions more similar to those of today. This included the presence of adzes, gouges and other ground stone tools believed to have been used for heavy woodworking activities such as the construction of dug-out canoes, grinding stones for processing nuts and seeds, specialized fishing gear including net sinkers, and a general reduction in the size of projectile points. The middle and late portions of the Archaic period saw the development of trading networks spanning the Great Lakes, and by 6,000 years ago copper was being mined in the Upper Great Lakes and traded into southern Ontario. There was increasing evidence of ceremonialism and elaborate burial practices and a wide variety of non-utilitarian items such as gorgets, pipes and 'birdstones' were being manufactured. By the end of this period populations had increased substantially over the preceding Palaeo-Indian occupation (Ellis 2013; Ellis et al. 1990).

More extensive Indigenous settlement of the region began during this period, sometime between 7,500 and 6,500 B.P. Artifacts from Archaic sites suggest a close relationship between these communities and what archaeologists refer to as the Laurentian Archaic stage peoples who occupied the Canadian biotic province transition zone between the deciduous forests to the south and the boreal forests to the north. This region included northern New York State, the upper St. Lawrence Valley across southern Ontario and Quebec, and the state of Vermont (Richie 1969; Clermont et al. 2003). The 'tradition' associated with this period is characterized by a more or less systematic sharing of several technological features, including large, broad bladed, chipped stone and ground slate projectile points, and heavy ground stone tools. This stage is also known for the extensive use of cold-hammered copper tools including "*bevelled spear points, bracelets, pendants, axes, fishhooks and knives*" (Kennedy 1970:59). The sharing of this set of features is generally perceived as a marker of historical relatedness and inclusion in the same interaction network (Clermont et al. 2003). Cemeteries also appear for the first time during the Late Archaic. Evidence of Archaic occupation has been found across eastern Ontario (see Clermont 1999; Clermont et al. 2003; Ellis 2013; Kennedy 1962, 1970; Laliberté 2000; Watson 1990).

Archaeologists use the appearance of ceramics in the archaeological record to mark the beginning of the Woodland period (c. 3,000 B.P. to c. 350 B.P.). Ceramic styles and

decorations suggest the continued differentiation between regional populations and are commonly used to distinguish between three periods: Early Woodland (2,900 to 2,300 B.P.), Middle Woodland (2,300 to 1,200 B.P.), and Late Woodland (1,200 to 400 B.P.). The introduction of ceramics to southern Ontario does not appear to have been associated with significant changes to lifeways, as hunting and gathering remained the primary subsistence strategy throughout the Early Woodland and well into the Middle Woodland. It does, however, appear that regional populations continued to grow in size, and communities continued to participate in extensive trade networks that, at their zenith c. 1,750 B.P., spanned much of the continent and included the movement of conch shell, fossilized shark teeth, mica, copper and silver; a large number of other items that rarely survive in the archaeological record would also have been exchanged, as well as knowledge.[3] Social structure appears to have become increasingly complex, with some status differentiation evident in burials. In southeastern Ontario, the first peoples to adopt ceramics are identified by archaeologists as belonging to the Meadowood Complex, characterized by distinctive biface preforms, side-notched points, and Vinette I ceramics which are typically crude, thick, cone-shaped vessels made with coils of clay shaped by cord-wrapped paddles. Meadowood material has been found on sites across southern Ontario extending into southern Quebec and New York State (Fox 1990; Spence et al. 1990).

In the Middle Woodland period, increasingly distinctive trends or 'traditions' continued to evolve in different parts of Ontario (Spence et al. 1990). Although regional patterns are poorly understood and there may be distinctive traditions associated with different watersheds, the appearance of better-made (thinner-walled and containing finer grit temper) ceramic vessels decorated with dentate or pseudo-scallop impressions have been used by archaeologists to distinguish the Point Peninsula Complex. These ceramics are identified as Vinette II and are typically found in association with evidence of distinct bone and stone tool industries. Sites exhibiting these traits are known from throughout south-central and eastern Ontario, northern New York, and northwestern Vermont, and are often found overlying earlier occupations. Some groups appear to have practiced elaborate burial ceremonialism that involved the construction of large earthen mortuary mounds and the inclusion of numerous and often exotic materials in burials, construed as evidence of influences from northern Ontario and the Hopewell area to the south in the Ohio River valley. Investigations of sites with occupations dating to this time period have allowed archaeologists to develop a better picture of the seasonal round followed in order to harvest a variety of resources within a home territory. Through the late fall and winter, small groups would occupy an inland 'family' hunting area. In the spring, these dispersed families congregated at specific lakeshore sites to fish, hunt in the surrounding forest and socialize. This gathering would last through to the late summer

[3] For example, the recent discovery of a cache of charred quinoa seeds, dating to 3,000 B.P. at a site in Brantford, Ontario, indicates that crops were part of this extensive exchange network, which in this case travelled from the Kentucky-Tennessee region of the United States. Thus far, there is no indication that these seeds were locally grown (Crawford et al. 2019).

when large quantities of food would be stored up for the approaching winter (Spence et al. 1990).

Towards the end of the Middle Woodland period (1200 B.P.), groups living in southern Ontario included horticulture in their subsistence strategy. Available archaeological evidence, which comes primarily from the vicinity of the Grand and Credit rivers, suggests that this development was not initially widespread. The adoption of maize horticulture instead appears to be linked to the emergence of the Princess Point Complex which is characterized by decorated ceramics combining cord roughening, impressed lines, and punctate designs; triangular projectile points; T-based drills; steatite and ceramic pipes; and ground stone chisels and adzes (Fox 1990). The distinctive artifacts and horticultural practices have led to the suggestion that these populations were ancestral to the Iroquoian-speaking peoples who later inhabited southern Ontario (Warrick 2000:427).[4]

Archaeologists have distinguished the Late Woodland period by the widespread adoption of maize horticulture by some Indigenous groups primarily across much of southern Ontario and portions of the southeast with favourable soils. The cultivation of corn, beans, squash, sunflowers and tobacco radically altered subsistence strategies and gained economic importance in the region over time. This change is associated with increased sedentarism, and with larger and more dense settlements focused on areas of easily tillable farmland. In some areas, semi-permanent villages, with communal 'longhouse' dwellings, appeared for the first time. These villages were occupied year-round for 12 to 20 years until local firewood and soil fertility had been exhausted. Many were surrounded by defensive palisades, evidence of growing hostilities between neighbouring groups. Associated with these sites is a burial pattern of individual graves occurring within the village. Upon abandonment, the people of one or more villages often exhumed the remains of their dead for reburial in a large communal burial pit or ossuary outside of the village(s) (Birch and Williamson 2013; Wright 1966). More temporary habitations such as small hamlets, agricultural cabin sites, and hunting and fishing camps were also used. Throughout much of eastern Ontario, however, the shield-like terrain limited horticulture and Indigenous groups continued to move frequently across this territory hunting, fishing, and gathering (Pilon 1999)

[4] There have been several studies, however, that indicate assigning ethnicity to archaeological sites based on ceramic typologies and other kinds of artifacts is problematic (see Hart and Englebrecht 2012; Kapyrka 2017). For instance, Iroquoian-style pottery is found on sites within traditional Anishinaabe territories in eastern New York and Ontario (Hart and Englebrecht 2012: 335, 345). Further, artifact traits associated with particular ethnicities are not always agreed upon by archaeologists and in many cases these traits indicate the presence of more than one group (Fox and Garrad 2004). Though valuable "*in terms of the history of archaeological thought*," equating an Indigenous artifact trait with ethnicity is overly simplistic and lacking any means for evaluation, exemplifying the importance of other lines of evidence, including oral histories, in an interpretive historical framework (Kapyrka 2017).

At the end of the Late Woodland period several Indigenous groups were living within eastern Ontario, although the territories associated with each and the relationships between them were complex and are not fully understood. Anishinaabe oral histories suggest a broad homeland extending far to the west of Ontario and include references to a migration from the Atlantic seaboard, as well as a subsequent return via the St. Lawrence River to the Great Lakes region, with the latter having occurred around 500 B.P. (Hessel 1993; Sherman 2015:27). Those who became known as the Algonquin[5] settled along the Ottawa River or Kichi-Sibi[6] and its tributaries in eastern Ontario and western Quebec; the Ojibwa and Nipissing were located further to the north and west. Living on and around the Canadian Shield, all Anishinaabeg maintained a more nomadic lifestyle than their agricultural neighbours to the south, and accordingly their presence is less visible in the archaeological record (Morrison 2005; Sherman 2015:28).

The so-called St. Lawrence Iroquoians occupied the St. Lawrence River valley from the east end of Lake Ontario to the Quebec City region and beyond, and have been identified archaeologically based on a distinctive material culture, a horticulture-based subsistence supplemented with fishing, hunting and gathering, and the presence of large semi-permanent villages as well as smaller camps. Numerous discrete settlement clusters have been identified across this large territory; however, the political and social relationships between these populations is unclear (Tremblay 2006). In eastern Ontario, significant St. Lawrence Iroquoian site clusters have been identified near the Spencerville/Prescott area, and just north of Lake St. Francis (sometimes referred to as the 'Cornwall Cluster'; Tremblay 2006). The material culture and settlement patterns of the fourteenth and fifteenth century Iroquoian sites found along the upper St. Lawrence in Ontario are directly related to the Iroquoian-speaking groups that Jacques Cartier and his crew encountered in A.D. 1535 at Stadacona (Quebec City) and Hochelaga (Montreal Island; Jamieson 1990:386; Tremblay 2006). By the late sixteenth century, however, all of the St. Lawrence Iroquoian settlements appear to have been abandoned. There are various hypotheses for the 'disappearance' of the St. Lawrence Iroquoians, although increasing hostilities with neighbouring populations, notably the Mohawk, is the most widely accepted (Tremblay 2006). At the time of their 'disappearance,' there was a significant increase in St. Lawrence Iroquoian ceramic vessel types on ancestral Huron-Wendat sites and also on some Algonquin sites, suggesting segments of the St. Lawrence Iroquoian population relocated into other regions as captives or refugees (Birch 2015:291; Sutton 1990:54; Tremblay 2006).

[5] The Algonquin of eastern Ontario increasingly use the Anishinaabemowin word Omàmiwinini to refer to themselves. Omàmiwinini describes the relationship with the land in the language, and though it was largely replaced by 'Algonquin' for many years, efforts are underway to reintroduce the term (Sherman 2008:77).

[6] The Algonquin have various names specific to each part of the Ottawa River. The lower part of the river from Mattawa down to Lake of Two Mountains is traditionally known as the Kichi-Sibi, also spelled Kiji Sibi, Kichisipi, Kichissippi, and Kichisippi (AOO 2020; Morrison 2005:9; Sherman 2015:27).

Agricultural villages of ancestral Huron-Wendat have been recorded along the north shore of Lake Ontario and up the Trent River dating to c. 550 B.P. By c. 450 B.P., the easternmost settlements of the ancestral Huron-Wendat were located between Balsam Lake and Lake Simcoe in the region that would become historic Huronia. This population movement is not fully understood, and undoubtedly involved complex interactions between different cultural groups including the Anishinaabeg and, as noted above, may also have included St. Lawrence Iroquoians. As such, there are conflicting interpretations of the archaeological and historical records related to this period (see Gaudreau and Lesage 2016; Gidigaa Migizi 2018; Gidigaa and Kapyrka 2015; Lainey 2006; Richard 2016; Pendergast 1972).

Finally, while the Iroquois or Haudenosaunee[7] homeland was initially south of Ontario in New York state, their oral histories suggest their hunting grounds extended along the north shore of Lake Ontario and the St. Lawrence River into southeastern Ontario and Quebec (Hill 2017). Archaeological data indicates some Haudenosaunee were living year-round in Ontario by the early seventeenth century (Konrad 1981).

The Indigenous population shifts and relationships of the late sixteenth and early seventeenth centuries through the period of initial contact with Europeans were complex and are not fully understood. They were certainly in part a result of the disruption of traditional trade and exchange patterns among all Indigenous peoples brought about by the arrival of the French, Dutch and British along the Atlantic seaboard the subsequent emergence of the lucrative St. Lawrence River trade route.

3.2 Regional Post-Contact Cultural Overview

The first Europeans to travel into eastern Ontario arrived in the early seventeenth century; predominantly French, they included explorers, fur traders and missionaries. While exploring eastern Ontario and the Ottawa River watershed between c. 1610 and 1613,[8] Samuel de Champlain and others documented encounters with different Indigenous groups speaking Anishinaabemowin, including the Matouweskarini along the Madawaska River, the Kichespirini at Morrison Island on the Ottawa River, the Otaguottouemin along the river northwest of Morrison Island, the Weskarini in the Petite

[7] Sometime between A.D. 1142 and A.D. 1451 the Mohawk, Oneida, Onondaga, Cayuga, and Seneca united to form the Haudenosaunee Confederacy, also known as the League of Five Nations, and called the Iroquois by the French. When the Tuscarora Nation joined the confederacy in 1722, it became the League of Six Nations.

[8] From this section onwards all dates are presented as A.D.

Nation River basin,[9] and the Onontchataronon[10] living in the South Nation River basin as far west as the Gananoque River basin (Hanewich 2009; Hessel 1993; Sherman 2015:29). These extended family communities subsisted by hunting, fishing, and gathering, and undertook some horticulture (see also Pendergast 1999; Trigger 1987). The Anishinaabeg living in the Upper Ottawa Valley and northeastward towards the headwaters of the Ottawa River included the Nipissing, Timiskaming, Abitibi (Wahgoshig), and others; however, as the French moved inland, they referred to all these groups who spoke different dialects of Anishinaabemowin as Algonquin (Morrison 2005:18).

At the time of Champlain's travels, the Algonquin were already acting as brokers in the fur trade and exacting tolls from those using the Ottawa River waterway which served as a significant trade route connecting the Upper Great Lakes via Lake Nipissing and Georgian Bay to the west and the St. Maurice and Saguenay via the Rivières des Outaouais (the portion of the Ottawa River extending eastward into Quebec from Lake Timiskaming). These northern routes avoided the St. Lawrence River and Lower Great Lakes route and, therefore, potential conflict with the Haudenosaunee (Joan Holmes & Associates Inc. 1993:2-3). Access to this southern route and the extent of settlement in the region fluctuated with the state of hostilities (Joan Holmes & Associates Inc. 1993:3). As the fur trade in New France was Montreal-based, Ottawa River navigation routes were of strategic importance in the movement of goods inland and furs down to Montreal and, in the wake of Champlain's travels, the Ottawa River became the principal route to the interior for the French. The recovery of European trade goods (e.g., iron axes, copper kettle pieces, glass beads, etc.) from sites throughout the Ottawa River drainage basin provides some evidence of the extent of interaction between Indigenous groups and the French during this period (Kennedy 1970).

With Contact, major population disruptions were brought about by the introduction of European diseases against which Indigenous populations had little resistance; severe smallpox epidemics in 1623-24 and again between 1634 and 1640 resulted in drastic population decline among all Indigenous peoples living in the Great Lakes region (Konrad 1981). The expansion of hunting for trade with Europeans also accelerated decline in the beaver population, such that by the middle of the seventeenth century the centre of the fur trade had shifted northward from what became the northeastern states into southern Ontario. The French, allied with the Huron-Wendat, the Petun, and the Anishinaabeg, refused advances by the Haudenosaunee to trade with them directly. Seeking to expand their territory and disrupt the French fur trade, the Haudenosaunee

[9] The Petite Nation River is in Quebec, with its mouth on the north side of the Ottawa River between Ottawa and Hawkesbury. It is sometimes confused with the South Nation River in eastern Ontario which empties into the south side Ottawa River opposite the Petite Nation River. Consequently, the Weskarini territory is sometimes associated with the South Nation River, but this appears to be an error (*cf.* Hessel 1993).

[10] This is a Haudenosaunee term and is, therefore, thought to be an Algonquin community that adopted Iroquoians who had been displaced from their territory along the St. Lawrence River near Montreal (Fox and Pilon 2016).

launched raids into the region and established a series of winter hunting bases and trading settlements near the mouths of the major rivers flowing into the north shore of Lake Ontario and the St. Lawrence River.[11] The first recorded Haudenosaunee settlements were two Cayuga villages established at the northeastern end of Lake Ontario (Konrad 1981). Between 1640 and 1650, the success of the Haudenosaunee Confederacy in warfare led to the dispersal of the Anishinaabeg and Huron-Wendat who had been occupying much of southern Ontario.

Fort Frontenac was established by the French at the present site of Kingston in 1673, and another fort was constructed at La Presentation (Ogdensburg, New York) in 1700. These forts served to solidify control of the fur trade and to enhance French ties with local Indigenous populations. To this end, the French also encouraged the establishment of Indigenous villages near their settlements (Adams 1986). The full extent of Indigenous settlement in eastern Ontario through to the end of the seventeenth century, however, is uncertain. The Odawa appear to have been using the Ottawa River for trade from c. 1654 onward and some Algonquin remained within the area under French influence, possibly having withdrawn to the headwaters of various tributaries in the watershed. In 1677 the Sulpician Mission of the Mountain was established near Montreal where the Ottawa River empties into the St. Lawrence River. While it was mostly a Mohawk community that became known as Kahnawake, some Algonquin who had converted to Christianity settled at the mission for part of the year and were known as the Oka Algonquin (Joan Holmes & Associates Inc. 1993).

As a result of increased tensions between the Haudenosaunee and the French, and declining population from disease and warfare, the Cayuga villages were abandoned in 1680 (Edwards 1984:17). Around this time, Anishinaabeg began to mount an organized counter-offensive against the Haudenosaunee who were pushed back to their traditional lands further south, resulting in a Mississauga presence in southern and south-eastern Ontario. This change saw Anishinaabeg gain wider access to European trade goods and allowed them to use their strategic position to act as intermediaries in trade between the British and Indigenous communities to the north (Edwards 1984:10,17; Ripmeester 1995; Surtees 1982).

Following almost a century of warfare, the Great Peace was signed in Montreal in 1701 between New France and 39 Indigenous Nations, including the Anishinaabeg, Huron-Wendat and Haudenosaunee. This led to a period of relative peace and stability. During the first half of the eighteenth century, the Haudenosaunee occupation appears to have been largely restricted to south of the St. Lawrence River, while Mississauga and Ojibwa were living in southern and central Ontario, generally beyond the Ottawa River watershed (Joan Holmes & Associates Inc. 1993:3). Algonquin were residing along the

[11] These settlements included: Quinaouatoua near present day Hamilton, Teiaiagon on the Humber River, Ganatswekwyagon on the Rouge River, Ganaraske on the Ganaraska River, Kentsio on Rice Lake, Kente on the Bay of Quinte, and Ganneious, near Napanee (Adams 1986).

Ottawa River and its tributaries, as well as outside the Ottawa River watershed at Trois-Rivières; Nipissing were located around Lake Nipissing and at Lake Nipigon. Reports from c. 1752 suggest that some non-resident Algonquin and Nipissing were trading at the mission at Lake of Two Mountains during the summer but returning to their hunting grounds "*far up the Ottawa River*" for the winter, and there is some indication that they may have permitted Haudenosaunee residents of the mission to hunt in their territory (Joan Holmes & Associates Inc. 1993:3; Heidenreich and Noël 1993:Plate 40).

In 1754, hostilities over trade and the territorial ambitions of the French and British led to the Seven Years' War, in which many Anishinaabeg fought on behalf of the French. With the French surrender in 1760, Britain gained control over New France, though in recognition of Indigenous title to the land the British government issued the Royal Proclamation of 1763. This created a boundary line between the British colonies on the Atlantic coast and the 'Indian Reserve' west of the Appalachian Mountains. This line then extended from where the 45th parallel of latitude crossed the St. Lawrence River near present day Cornwall northwestward to the southeast shore of Lake Nipissing and then northeastward to Lac St. Jean. The proclamation specified that "*Indians should not be molested on their hunting grounds*" (Joan Holmes & Associates Inc. 1993:4) and outlawed the private purchase of Indigenous land, instead requiring all future land purchases to be made by Crown officials "*at some public Meeting or Assembly of the said Indians*" occupying the land in question (cited in Surtees 1982: 9). In 1764, the post at Carillon on the Ottawa River was identified as the point beyond which traders could only pass with a specific licence to trade in "*Indian Territory.*" Petitions in 1772 and again in 1791 described Algonquin and Nipissing territory as the lands on both sides of the Ottawa River from Long Sault to Lake Nipissing. Settlers continued to trespass into this territory, however, cutting trees and driving away game vital to Indigenous lifeways (Joan Holmes & Associates Inc. 1993:5). Akwesasne, within the Haudenosaunee hunting territory, became a permanent settlement towards the middle of the eighteenth century.[12]

At first, the end of the French Regime brought little change to eastern Ontario. Between 1763 and 1776 some British traders traveled to the Kingston area, but the British presence remained sporadic until 1783 when Fort Frontenac was officially re-occupied. With the conclusion of the American Revolutionary War (1775 to 1783), however, the British sought additional lands on which to settle United Empire Loyalists fleeing the United States, disbanded soldiers, and the Mohawk who had fought with the British under Thayendanegea (Joseph Brant) and Chief Deserontyon and were, therefore, displaced from their lands in New York State. To this end, the British government undertook hasty negotiations with Indigenous groups to acquire rights to lands; however, these negotiations did not include Algonquin and Nipissing who were continuously ignored, despite much of the area being their traditional territory (Lanark County Neighbours for Truth and Reconciliation 2019). Initially the focus for settlement was the north shore of

[12] www.firstbatuibs.info/akwesasne.html

Lake Ontario and the St. Lawrence River, resulting in a series of 'purchases' and treaties beginning with the Crawford Purchases of 1783. As noted, these treaties did not include all of the Indigenous groups who lived and hunted in the region and the recording of the purchases – including the boundaries – and their execution were problematic; they also did not extinguish Indigenous rights and title to the land (Joan Holmes & Associates Inc. 1993:5; Royal Commission on Aboriginal Peoples 1996). The *Crown Grant to the Mohawks of the Bay of Quinte* was issued in 1784 in recognition of the Six Nations' support during the American Revolutionary War. It included lands on the Bay of Quinte, originally part of the Crawford Purchases, on which Chief Deserontyon and other Haudenosaunee settled.[13]

Major Samuel Holland, Surveyor General for Canada, began laying out the land within the Crawford Purchases in 1784 with such haste that the newly established townships were assigned numbers instead of names. Euro-Canadian settlement along the north shore of the St. Lawrence River and the eastern end of Lake Ontario began in earnest about this time. By the late 1780s the waterfront townships were full and more land was required to meet both an increase in the size of grants to all Loyalists and grant obligations to the children of Loyalists who were now entitled to 200 acres in their own right upon reaching the age of 21 (H. Belden & Co. 1880:16). In 1792 John Graves Simcoe, Lieutenant Governor of the Province of Upper Canada, offered free land grants to anyone who would swear loyalty to the King, a policy aimed at attracting more American settlers. As government policy also dictated the setting aside of one seventh of all land for the Protestant Clergy and another seventh as Crown reserves, pressure mounted to open up more of the interior. As a result, between 1790 and 1800 most of the remainder of the Crawford Purchases was divided into townships (H. Belden & Co. 1880:16).

A number of other purchases during the late eighteenth century between representatives of the Crown and certain Anishinaabe covered lands immediately west of the Crawford Purchases, from the north shore of Lake Ontario northward to Lake Simcoe and Georgian Bay/Lake Huron. These included the John Collins Purchase of 1785, the Johnson-Butler Purchase[14] of 1787-88, and the 1798 Penetanguishene Purchase (Treaty 5) aimed at acquiring a harbour on Lake Huron for British vessels.[15] The lands purportedly covered by these purchases were often poorly defined and were thus included in the later Williams Treaties of 1923 (see below).

The *Constitution Act* of 1791, which created the provinces of Upper and Lower Canada (later Ontario and Quebec) used the Ottawa River as the boundary between the two. This effectively divided the Algonquin and Nipissing territories, both of which straddled the

[13] https://www.ontario.ca/page/map-ontario-treaties-and-reserves
[14] Sometimes referred to as the 'Gunshot Treaty' as it reportedly covered the land as far back from the lake shore as a person could hear a gunshot (https://www.ontario.ca/page/map-ontario-treaties-and-reserves).
[15] https://www.ontario.ca/page/map-ontario-treaties-and-reserves

river. The Algonquin and Nipissing sent a letter to the Governor General of the Province of Canada in 1798, requesting that settlers be restricted to the banks of the Ottawa River and detailing the difficulties caused by encroaching settlement (Joan Holmes & Associates Inc. 1993:5; see also Lanark County Neighbours for Truth and Reconciliation 2019). In this letter the Chiefs noted the belt of wampum and map of their lands that was given to Governor Carleton some years earlier, pleading for no more of the encroachment that was driving away game and pushing them into infertile lands; however, there was no response. In the early 1800s, a few Algonquin and Nipissing settled on the shores of Golden Lake, known to them as 'Peguakonagang;' they called themselves 'Ininwezi,' which they translated as 'we people here along' (Johnson 1928; MacKay 2016).[16] The Golden Lake band, as they initially came to be known, resided in this area for at least part of the year, with various band members maintaining traplines, hunting territories, and sugar bushes.

The War of 1812 between the United States and Great Britain (along with its colonies in North America and its Indigenous allies) brought another period of conflict to the region. In 1815, at the conclusion of the war, the British government issued a proclamation in Edinburgh to further encourage settlement in British North America. The offer included free passage and 100 acres of land for each head of family, with each male child to receive his own 100 acre parcel upon reaching the age of 21 (H. Belden & Co. 1880:16). At the same time, the government was seeking additional land on which to resettle disbanded soldiers from the War of 1812. Demobilized forces could thereby act as a 'force-in-being' to oppose any possible future incursions from the United States. Veterans were encouraged to take up residence within a series of newly created 'military settlements' including those at Perth (1816) and Richmond (1818). The pressure to find more land was exacerbated by the sheer number of settlers moving into the region as a result of these initiatives, which began to push settlement beyond the acquired territory into what had formally been protected as 'Indian Land.'[17]

Additional 'purchases' were signed in the early nineteenth century between the Crown and certain Anishinaabe communities including the Lake Simcoe Purchase (Treaty 16) signed in 1815 and covering lands between Lake Simcoe and Georgian Bay, the Nottawasaga Purchase (Treaty 18) of 1818 to the south and west of the Lake Simcoe Purchase, and the Rice Lake Purchase or Treaty 20 of 1818 which covered a large area around Rice Lake.[18]

Further east, with the settlement of the region underway, Lieutenant Governor Gore ordered Captain Ferguson, the Resident Agent of Indian Affairs at Kingston, to arrange

[16] The Algonquin of River Desert identified The Golden Lake Band using the name "Nozebi'wininiwag," translated as "Pike-Water People" (Speck in Johnson 1928:174).
[17] Between 1815 and 1850 over an estimated 800,000 Euro-Canadian settlers moved into the region (https://www. lanarkcountyneighbours.ca/the-petitions-of-chief-shawinipinessi.html).
[18] https://www.ontario.ca/page/map-ontario-treaties-and-reserves

the purchase of additional lands from the chiefs of the Ojibwa and Mississauga or Michi Saagiig Nishnaabeg. The resulting Rideau Purchase (Treaty 27 and 27¼) extended from the rear of the earlier Crawford Purchases to the Ottawa River and was signed by the Michi Saagiig Nishnaabeg or Mississauga in 1819 and confirmed in 1822. This 'purchase' was also problematic and excluded the Algonquin whose traditional territory it covered (Canada 1891:62; Surtees 1994:115). As this purchase included lands within the Ottawa River watershed, the Algonquin and Nipissing protested in 1836 when they became aware of its terms (Joan Holmes & Associates Inc. 1993:6).

As Euro-Canadian settlement spread, Indigenous groups were increasingly pushed out of southern and eastern Ontario, generally moving further to the north and west, although some families remained in their traditional lands, at least seasonally. Records relating to the Hudson's Bay Company, the diaries of provincial land surveyors, the reports of geologists sent in by the Geological Survey of Canada, census returns,[19] store account books and settler's diaries all provide indications of the continued Indigenous settlement in the region, as does Indigenous oral history. In addition to their interactions with the Algonquin who remained in the area, the nineteenth century settlers found evidence of the former extent of Indigenous occupation, particularly as they began to clear the land. In 1819, Andrew Bell wrote from Perth:

> *All the country hereabouts has evidently been once inhabited by the Indians, and for a vast number of years too. The remains of fires, with the bones and horns of deers (sic) round them, have often been found under the black mound... A large pot made of burnt clay and highly ornamented was lately found near the banks of the Mississippi, under a large maple tree, probably two or three hundred years old. Stone axes have been found in different parts of the settlement.*
>
> (cited in Brown 1984:8)

While some Algonquin and Nipissing continued to spend part of the summer at Lake of Two Mountains through this period, most of the year appears to have been spent on their traditional hunting grounds, and by the 1830s there were specific claims for land by individuals such as Mackwa on the Bonnechere River and Constant Pennecy on the Rideau waterway. In 1842, Chief Pierre Shawinipinessi,[20] an Algonquin leader, petitioned the Crown for a land tract of 2,000 acres between the townships of Oso, Bedford and South Sherbrooke to enable his people to sustain themselves (Huitema 2001;

[19] While Indigenous peoples were clearly still residing in the area and making use of the land, they often do not appear in the 1851 to 1871 census records. Huitema (2001:129) notes that Algonquin were sometimes listed in these records as 'Frenchmen' or 'halfbreeds' because they had utilized the mission at Lake of Two Mountains as their summer gathering place and, therefore, were thought of as being French.

[20] There are numerous variations in the spelling of Chief Shawinipinessi's name; he is also known by the name of Peter Stephens or Stevens).

Ripmeester 1995:164-166; Sherman 2008:32-33).[21] A licence of occupation for the 'Bedford Algonquin' was granted in 1844, with Mississauga (Michi Saagiig Nishnaabeg) from Alnwick reportedly also living at Bedford (Joan Holmes & Associates Inc. 1993:7-8). Illegal logging operations, however, interfered with life on the reserve, and despite protests from Chief Shawinipinessi and legislation passed in 1838 and then later in 1850 to protect Indigenous lands,[22] it was allowed to continue, depleting the local food resources. In response to an 1861 petition to address the trespassing of settlers, the existence of the Bedford tract was denied (LAC microfilm reel C-13419). At this time some of the community moved to nearby lands while others joined the Algonquin at Kitigan Zibi, and at Pikwàkanagàn where the 'Golden Lake Reserve' was created in 1873 (Hanewich 2009; Joan Holmes & Associates Inc. 1993:9). Around 1836 some consideration was given to facilitating Algonquin and Nipissing settlement in the Grand Calumet Portage and Allumette Island area, but this was not pursued (Joan Holmes & Associates Inc. 1993).

Other treaties signed in the mid-nineteenth century included the St. Regis Purchase (Treaty 57) signed in 1847 between the Crown and the Mohawk and covering a narrow parcel of land, known as the 'Nutfield Tract' extending north of the St. Lawrence River at Cornwall towards the Ottawa River, and the Robson-Huron Treaty (Treaty 61) of 1850 between the Crown and certain Anishinaabeg for lands east of Georgian Bay and the northern shore of Lake Huron eastward to the Ottawa River.[23]

Through the early twentieth century, off-reserve Algonquin and Nipissing were told to move to established reserves at Golden Lake (Pikwàkanagàn), Maniwaki (Desert River) and at Gibson on Georgian Bay (which had been established for the re-settlement of both Algonquin and Mohawk from Lake of Two Mountains), but many remained in their traditional hunting territories. There is also evidence to suggest that Akwesasne Mohawk trapped and hunted north of their reserve as far as Smiths Falls and Rideau Ferry between c. 1924 and 1948 (Joan Holmes & Associates Inc. 1993:10-11; Sherman 2008:33).

The Williams Treaties of 1923 were signed between the Crown and seven Anishinaabe First Nations to address lands that had not been surrendered via a formal treaty process (see above).[24] These lands covered a large area from the north shore of Lake Ontario to Lake Nipissing and overlapped with a number of other treaties and 'purchases.' The

[21] July 17, 1842 petition 115 addressed to Sir Charles Bagot, Governor General, Library and Archives Canada RG10, V186 part 2, as transcribed in Joan Holmes & Associates Inc. (1993) *Report on the Algonquins of Golden Lake Claim* Vol. 10-12:101.

[22] Chapter XV. An Act for the protection of the Lands of the Crown in this Province, from Trespass and Injury. Thirteenth Parliament, 2nd Victoria, A.D. 1839. An Act for the Protection of the Indians in Upper Canada from Imposition and the Property Occupied or Enjoyed by Them from Trespass and Injury; passed by the government of Upper Canada on August 10, 1850. Available from https://bnald.lib.unb.ca/node/5342; United Canadas (1841-1857) 13 & 14 Victoria – Chapter 74:1409.

[23] https://www.ontario.ca/page/map-ontario-treaties-and-reserves

[24] https://www.ontario.ca/page/map-ontario-treaties-and-reserves

Williams Treaties First Nations include the Chippewas of Beausoleil, Georgina Island and Rama, and the Mississaugas of Alderville, Curve Lake, Hiawatha and Scugog Island. To address further issues with a number of the pre-confederation purchases and treaties, the Williams Treaties First Nations ratified the Williams Treaties Settlement Agreement with Canada and Ontario in June, 2018. This agreement recognized harvesting rights in Treaties 5, 16, 18, 20, 27 and 27¼.[25]

As noted above, lands considered traditional Algonquin territory were included in various nineteenth century purchases that did not involve the Algonquin. Algonquin claims to these lands include a series of petitions to the Crown going back to 1772 that asserted Algonquin rights to land and resources. An official land claim was made in the 1980s and, in 2016, an Agreement-in-Principle was signed by Ontario, Canada and the Algonquins of Ontario, a step towards a treaty recognizing Algonquin rights across much of eastern Ontario.[26]

Carleton Place

Beckwith Township was surveyed in 1816 and named after Sir Thomas Sydney Beckwith, the Quarter Master for Canada between 1815 and 1823. He also made arrangements for and personally superintended the arrival of the Scottish immigrants in 1816. Settlement of the township began the following year, with approximately 27 land grants being issued. With the arrival of the Perthshire Highlanders and a few Irish immigrants in 1818, the population of the township increased from 50 to c. 300 (Brown 1969:5). Throughout the nineteenth century, small villages developed at strategic locations in the township, including Prospect, Franktown, Black's Corners, Tennyson, Ashton, Lake Park, Gilles Corners and at Morphy's Falls, which would later become known as the village of Carleton Place.

The first settlement rights within the footprint of the original village of Carleton Place were formally issued to the Morphy family (from Tipperary) in 1819. Edmond Morphy and his three eldest sons each drew 100 acres of land (for a total of 400 acres) on Lots 14 and 15 in Concession 12. Edmond and his wife, Barbara, along with their six sons and two daughters began building that same year and soon there was a cluster of shops, mills and houses that became known as Morphy's Falls. The Moore family also settled in the area in 1819, building a log cabin near Moore Street on the Franktown Road (Brown 1969:3).

By the mid-1820s, Morphy's Falls had grown considerably. A grist mill and potash factory had been built, William Moore had opened a blacksmith shop and Robert Barnett had arrived to open a cooperage shop, all in 1820. Within a year Hugh Boulton had built a sawmill and Alexander Morris had opened a combined store and tavern (the famed

[25] www.williamstreatiesfirstnations.ca
[26] https://www.ontario.ca/page/map-ontario-treaties-and-reserves

Mill Road Tavern) near the grist mill on the north shore above the falls (Brown 1969:3-4). By 1825 James Kent was teaching at the first school (Brown 1969:6). This same year, Caleb Strong Bellows, formerly of Richmond Landing/Bellows Landing, arrived and built a distillery in the village; in 1830 he also became the first postmaster. It was at this time that the village's name was changed to Carleton Place (Brown 1969:4). Around the same time, the Bell brothers opened a general store on the north shore and the first log bridge was built to span the river (Geddes 1992:215). James Rosamond also arrived in 1830 and began a wool carding and cloth dressing business that led to the first known textile mill in the eastern half of the province. It operated in Carleton Place from 1846 through to 1857, was run by water power and was equipped with machinery for spinning and weaving (Brown 1969:5). The first church was built by the Methodists in 1831, the Carleton Place Public Library was founded in 1841 (with the catalogue from these first years listing 140 titles), and by 1850 *The Carleton Place Herald*, a weekly newspaper, had been founded by James C. Poole (Brown 1969). A Canadian business directory dating to 1851 also listed grist mills, oatmeal mills, sawmills, the woollen factory, carding and fulling mills, a foundry and a tannery in the village (Brown 1984:148).

The Brockville and Ottawa Railway line was built through Beckwith Township in the late 1850s to join rail and water connections at Brockville with Smith Falls, Perth, Carleton Place, Almonte and eventually Arnprior by 1864. It crossed the 9th Line Beckwith Road just west of Black's Corners. Initially, the railway brought high taxes and few benefits to the rural residents of the township. It failed to turn a profit and in the 1860s was taken over by the Canadian Central Railway (CCR). In 1869 the CCR began building a line to connect Ottawa to the existing line at Carleton Place and in 1882 the Canadian Pacific Railway Company, which had absorbed the CCR, moved their headquarters from Brockville to Carleton Place and built a two-storey railway station on the west side of the railway junction. Carleton Place became a railway divisional point in 1884 (Brown 1969:104).

A detailed plan from H.F. Walling's 1863 *Map of the Counties of Lanark and Renfrew*, illustrates the extent to which the community had expanded by this time. The railway line is shown just east of town, and a second bridge to accommodate the rail line had been built. Several hotels, mills and other businesses are also shown along the main streets (Bell, Bridge and Mill Streets), as are a large number of residential buildings. Development in Carleton Place continued at a fast pace and it was incorporated as a village in 1870. In 1875 the municipal council bought a $1,000 hand pumper fire engine and the Ocean Wave Fire Company was formed. By 1876 a second newspaper, the *Central Canadian*, had begun circulation (Brown 1969:101).

As the agricultural potential of much of Beckwith Township was somewhat limited, lumbering became the primary nineteenth century activity, with agriculture undertaken on a subsistence basis and to support lumber operations. Lumbering activities probably began as early as 1825 and some of the better known Upper Canada lumber barons (Allan

Gilmour, John Gilles, Peter McLaren, Boyd Caldwell and the Canada Lumber Company) all had timber limits on the upper Mississippi watershed in the second half of the nineteenth century (Geddes 1992:213). By 1867, the Gilles lumbering family had built a new sawmill in Carleton Place and two years later the Caldwell sawmill opened (Brown 1969:38).

The population doubled from 2,000 to 4,000 between 1880 and 1890, when Carleton Place became incorporated as a town (Brown 1969:62). The sawmill industry on the Mississippi River peaked in 1888, when the largest sawmill to be built in Carleton Place was put into operation by the Canada Lumber Company (Brown 1969:42). Before long, however, the logging industry had exhausted the region's vast pine forests, and thus most of the sawmills had been demolished by 1908 to make way for the construction of hydroelectric facilities.

Although development in the town slowed somewhat as logging activities declined, it did not cease altogether. In 1885 the Ottawa Valley's telephone system was installed and put into operation. The following year the first telephone directory was released and the widespread use of electric lights soon followed (Brown 1969:62 and 105). In 1897 a new town hall was built, and concrete sidewalks were installed in 1906 (Brown 1969:107).

The construction of Highway 7, which skirted the southernmost boundaries of the town, began in November, 1931, and the new highway was officially opened to traffic in August, 1932. In the mid-1950s, the road was widened and numerous smaller realignments and improvements were made, but the primary corridor has remained unaltered until recent years.

Today, Carleton Place is in the midst of another population boom. The twinning of Highway 7 between Ottawa and the town limits has made it an ideal commuter community. As a result of the population growth (nearly 10,000 to date), there has been an expansion of both housing and business development, with the latter being focused along McNeely Avenue. Many early structures are still standing in the town, including both the new and old town halls, and the family homes of many of the early residents (Geddes 1992:217).

3.3 Property History

Lot 13, Concession 11

The following detailed review of archival research was conducted in order to develop a picture of the land-use history of the study area through the nineteenth and twentieth centuries, particularly as it relates to the archaeological potential of the property. Information was compiled from a variety of sources, including the 1863 Walling map of Lanark and Renfrew Counties, the 1880 Belden map, as well as twentieth-century topographic maps and aerial photographs, census records, directories, and survey

plans.[27] Records at the Lanark County Land Registry Office (or LCLRO) were also consulted.

The study area is located in the northwest corner of Lot 13, Concession 11, in Beckwith Township, now within the Town of Carleton Place. The patent to the southwest half of the lot was awarded by the Crown in 1828 to Thomas Willis, with the property passing to Henry Willis the following year (LCLRO Instrument B499). Shortly thereafter, in 1834, Mr. Willis sold part of the lot to Edmond Morphy for the price of £25, though the location of this parcel is unknown (LCLRO Instrument D14). This parcel and likely others changed hands several times over the nineteenth century, with the southwestern 50 acres coming into the possession of Robert Latimer in the 1880s or 1905 (LCLRO Instruments 2F-1887, 2G-2320 and 2K-3601). Latimer sold the 50 acres to Alexander McAllister in 1905; it was then acquired by Joseph Clark in 1918, followed by James McAllister in 1920 and William Chilcott in 1924 (LCLRO Instruments CP-6046, CP-7870, CP-8255 and CP-9041). Chilcott then sold a 86 foot by 121 foot parcel to Richard Watkins in 1934 for $100, which was passed to Mary Watkins in 1958 (LCLRO Instruments CP-180 and CP-4398). This was the current small plot containing the residence at 292 Lake Avenue. The remainder of the southwest quarter of Lot 13 was acquired by William Napier in 1963 (LCLRO Instrument A14970). Napier granted 7.325 acres property, the parcel containing the track immediately to the south of the study area, to the Lanark County Board of Education in 1973, by default creating the current study area adjacent to Lake Avenue (LCLRO Instrument A33728). Mississippi Road had also been constructed by this time along the division between the southwestern quarter and the northeastern half of the southwestern half of Lot 13.

E. Wilkie, a surveyor, purchased a portion of the northeast part of Lot 13 in 1904 from William Caldwell for the purpose of establishing 56 lots and constructing Boyd, Caldwell, Donald, Wilson, and Woodward Streets (LCLRO Plan 5782). It does not appear that all of these lots were built upon immediately, however, according to historical maps (Map 4). Nonetheless, these streets have remained into the twenty-first century and represent the beginning of the neighborhood which is directly northeast of the current study area. The process was continued by Samuel B. Code, a surveyor, who established a further 20 lots on Woodward Street in 1912 and again by Mr. Wilkie who added 31 lots to Boyd and Arthur Streets the following year (LCLRO Plans 7039 and 7211).

[27] Historical maps and aerial photographs have been geo-referenced using Geographic Information Systems (GIS) software to generate the mapping contained in this report. Geo-referencing is the name given to the process of transforming a map or image by assigning X and Y coordinates to features, allowing the software to rotate, stretch, and in some cases warp the original image to best match the supplied coordinates. Owing to considerable variation in the scale, accuracy, and resolution of historical maps and aerial photographs, there is often an unknown degree of error introduced in the process of geo-referencing and, as for this reason, the location and extent of the study area overlain on these maps should be considered approximate.

An aerial photograph taken in 1927 is the first imagery to show two structures, or groups of structures, within the study area (see Map 4). The current residence at 254 Lake Avenue appears to have been erected by this time, with two smaller structures around it, and a large building, possibly a barn, was located centrally within the subject property. A subsequent topographic map from 1939 confirms that the large structure was a barn and shows the residence in the northeast end of the study area. The two additional residences depicted to the southwest of the barn, one erroneously placed within the study area boundaries by georeferencing, were the current structures respectively at 292 Lake Avenue and 308 Lake Avenue (or its predecessor).

An aerial photograph, dated to 1946, depicts structures in the same locations to those in the 1927 aerial photograph, with the addition of a driveway or access road that begins in the middle of the study area at Lake Avenue West, curves around the large structures in the centre of the subject property (clearly shown to be two barns positioned in an 'L' shape), and follows the southeast edge of the property boundary before making a ninety-degree turn at the southeast corner mirroring the path of the present Mississippi Road (Map 5). A subsequent aerial photograph taken in 1967 shows that the more northerly barn had been razed and the access road removed (see Map 5). This same photograph depicts the first iteration of Mississippi Road currently lying adjacent to the northeastern edge of the property. By 1973 the remaining barn had been razed and by 1978 the sports field had been established, including the running track which remains in use (see Map 5). DRAPE imagery from 2019 shows that a second curved driveway beginning in the middle of the study area at Lake Avenue West and curving northeast toward the extant structure had been constructed at some point between 1978 and 2019 (see Map 2). Review of the available historical maps and imagery has indicated, therefore, that the central and northeastern thirds of the study area have experienced several phases of development and redevelopment throughout the twentieth century, though the southwestern third has remained vacant.

4.0 ARCHAEOLOGICAL CONTEXT

This section describes the archaeological context of the study area, including known archaeological research, known cultural heritage resources (including archaeological sites), and environmental conditions. In combination with the historical context outlined above, this provides the necessary background information to evaluate the archaeological potential of the property.

4.1 Previous Archaeological Research

In order to determine whether any previous archaeological fieldwork has been conducted within or in the immediate vicinity of the present study area, a search of the titles of reports in the *Public Register of Archaeological Reports* maintained by the Ministry of Tourism, Culture and Sport (MTCS) was undertaken. To augment these results, a search of the Past Recovery corporate library was also conducted.[28]

A prime source for unregistered archaeological finds is the initial series of *Annual Archaeological Reports for Ontario* (AARO), which were published as appendices to the report of the Minister of Education in the *Ontario Sessional Papers*. In these reports, dating between 1887 and 1928, staff of the provincial museum (which eventually became the Royal Ontario Museum) published articles by several of Ontario's most prominent collectors, amateur archaeologists, and museum staff. The articles provide a record of some of the earliest archaeological fieldwork to have taken place in the province, as well as documentation of the private collections that were donated to the museum. These articles report on extensive artifact collecting in Lanark County in the late nineteenth and early twentieth centuries, especially around the Rideau Lakes (cf. Beeman 1894).

To the knowledge of Past Recovery staff, no previous archaeological assessment or avocational work has occurred within the study area. Known cultural resource management assessments in the immediate vicinity include the following:

- In 2010 and 2011, Past Recovery Archaeological Services Inc. undertook Stage 1 and Stage 2 archaeological assessments for the J.W. Southwell property on Lot 12, Concession 12 (Past Recovery 2011a; PIF: P030-097-2010, P031-023-2011). The Stage 1 assessment found that the study area had high potential for pre-Contact

[28] In compiling the results, it should be noted that archaeological fieldwork conducted for research purposes should be distinguished from systematic property surveys conducted during archaeological assessments associated with land use development planning (generally after the introduction of the *Ontario Heritage Act* in 1974 and the *Environmental Assessment Act* in 1975), in that only those studies undertaken to current standards can be considered to have adequately assessed properties for the presence of archaeological sites with cultural heritage value or interest. In addition, it should be noted that the vast majority of the research work undertaken in the area has been focused on the identification of pre-Contact Indigenous sites, while current MTCS requirements minimally require the evaluation of the material remains of occupations and or land uses pre-dating 1900.

period archaeological resources given the proximity to the Mississippi River and moderate to low potential for historic period resources. A Stage 2 assessment was recommended. No archaeological resources were found and no further assessment was recommended.

- In 2011, Past Recovery Archaeological Services Inc. undertook Stage 1 and 2 archaeological assessments of the proposed Carlgate High Subdivision on Lot 12, Concession 12 (Past Recovery 2011b; PIF: P031-024-2011). The Stage 1 assessment found that the southern section of the study area had moderate potential for both pre- and post-Contact period archaeological resources given the proximity of both the Mississippi River and High Street (a historical transportation corridor). A Stage 2 assessment was recommended. No archaeological resources were found and no further assessment was recommended.
- Stage 1 and Stage 2 assessments for a proposed subdivision on Lot 12, Concession 11, were completed in 2015 (Adams Heritage 2016; PIF P003-0423-2016, 2015; PIF P003-0423-2015). No archaeological resources were found and no further assessment was recommended.
- In 2017, Past Recovery Archaeological Services Inc. undertook Stage 1, 2 and 3 (cemetery) assessments on behalf of Fifty Allan Condominiums, at 44 Allan Street and 139 Charles Street, approximately 725 metres north of the study area, within Lot 14, Concession 12. Stage 2 testing found a sufficient number of post-contact artifacts to warrant the registration of a site (BgGa-9), but the artifacts were not found to be of cultural significance. The Stage 3 cemetery study did not find evidence of grave shafts (Past Recovery 2017; PIF: P336-0161-2017, P336-0166-2017, P336-0170-2017).
- Archaeological Services Inc. was retained in 2019 to undertake a Stage 1 archaeological assessment associated with the replacement of the Bridge Street bridge, 963 metres from the current study area. Part of the study area was found to retain archaeological potential and Stage 2 assessment was recommended (ASI 2019; PIF: P450-0025-2018).
- Past Recovery Archaeological Services Inc. completed Stage 1 and Stage 2 archaeological assessments in 2020/2021 for a proposed subdivision at 166 Boyd Street, just east of the current study area (Past Recovery 2021; PIF: P1201-0065-2020, P1201-0067-2021). No archaeological resources were found and no further assessment was recommended.
- An archaeological survey of the Mississippi River was completed in 1977 and 1978 (Wright and Engelbert, 1978).

4.2 Previously Recorded Archaeological Sites

The primary source for information regarding known archaeological sites in Ontario is the *Archaeological Sites Database* maintained by the Ontario Ministry of Tourism, Culture and Sport. The database largely consists of archaeological sites discovered by professional archaeologists conducting archaeological assessments required by legislated

processes under land use development planning (largely since the late 1980s). A search of the *Sites Database* indicated that there is one registered nineteenth century Euro-Canadian sites located within a one-kilometre radius of the study area, though it does not merit further investigation (Table 1).

Table 1. Summary of Registered Archaeological Sites within a One-Kilometre Radius of the Study Area.

Borden Number	Site Name	Time Period	Inferred Agency	Inferred Function	Review Status
BgGa-9	44 Allan Street	Post-Contact	Euro-Canadian	Residential	No further CHVI

4.3 Cultural Heritage Resources

The recognition or designation of cultural heritage resources (here referring only to built heritage features and cultural heritage landscapes) may provide valuable insight into aspects of local heritage, whether identified at the local, provincial, national, or international level. As some of these cultural heritage resources may be associated with significant archaeological features or deposits, the background research conducted for this assessment included the compilation of a list of cultural heritage resources that have previously been identified within or immediately adjacent to the current study area. The following sources were consulted:

- Federal Heritage Buildings Review Office online Directory of Heritage Designations (http://www.pc.gc.ca/eng/progs/beefp-fhbro/index.aspx);
- Canada's Historic Places website (http://www.historicplaces.ca/en/home accueil.aspx);
- Ministry of Tourism, Culture and Sport's List of Heritage Conservation Districts (http://www.mtc.gov.on.ca/en/heritage/heritage_conserving_list.shtml); and,
- Ontario Heritage Trust website (https://www.heritagetrust.on.ca/en/index.php/online-plaque-guide).

Three cultural heritage sites were found within a three-kilometre radius from the study area.

The Canadian Pacific Railway Station, officially designated a Federal Heritage Building (as part of the *Heritage Railway Stations Protection Act*) on August 10, 1991, is located at 110 Miguel Street at the intersection of Miguel Street and Franktown Road. Built by M. Sullivan & Son on behalf of the Canadian Pacific Railway (CPR) and their engineering team in Montreal, it gained recognition as the last of seven stone CPR stations in the Upper Ottawa Valley built between 1897 and 1922. It was constructed from 1921 to 1922 and served as a symbol of prosperity for Carleton Place and the surrounding area,

offering both freight and passenger services to Montreal, Ottawa, and toward the West; however, passenger service was officially discontinued in 1989. This building is also recognized for its architectural value. It is approximately 1.17 kilometres from the study area.[29]

The Carleton Place Town Hall was officially granted a Municipal Heritage Designation (Part IV), under the *Ontario Heritage Act*, by the town of Carleton Place on October 16, 1978. It is located at 175 Bridge Street, on the south shore of the Mississippi River. Its architect was George W. King, who designed the town hall in the Richardson Romanesque style; his design of the three-storey, stone building with bell tower and turrets was constructed by Matthew Ryan from 1895 to 1897. In addition to the architectural value of the building, it holds historical significance as it was built on the site of one of the first homesteads in Carleton Place: that of William Morphy. It is approximately 962 metres from the study area.[30]

The Victoria School Museum (now known as the Carleton Place and Beckwith Heritage Museum) was officially granted a Municipal Heritage Designation (Part IV), under the *Ontario Heritage Act*, on April 17, 1978. It is located at 267 Edmund Street. Designed by William Rorison and built by William Willoughby from 1871 to 1872, this building has had a few roles marking its significance in the community: in 1872 it became the first official town hall and lock-up for Carleton Place, until the Carleton Place Town Hall at 175 Bridge Street was built in 1879, and from 1879 until 1969 it was used for a public school. Since then, the building has been host to the Mississippi Valley Conservation Authority, the Beckwith Historical Society's Victoria School Museum, and the Canada Veterans' Hall of Valour. This building has gained recognition for both its historic and architectural value. It is approximately 1.25 kilometres from the study area.[31]

4.4 Heritage Plaques and Monuments

The recognition of a place, person, or event through the erection of a plaque or monument may also provide valuable insight into aspects of local history, given that these markers typically indicate some level of heritage recognition. As with cultural heritage resources (built heritage features and/or cultural heritage landscapes), some of these places, persons, or events may be associated with significant archaeological features or deposits. Accordingly, this study included the compilation of a list of heritage plaques and/or markers in the vicinity of the study area. The following sources were consulted:

[29]Parks Canada Directory of Federal Heritage Designations. "Canada Pacific Railway", https://www.pc.gc.ca/apps/dfhd/page_hrs_eng.aspx?id=2006
[30]Canada's Historic Places. "Carleton Place Town Hall", https://www.historicplaces.ca/en/rep-reg/place-lieu.aspx?id=9810&pid=0
[31]Canada's historic Places. "Victoria School Museum", https://www.historicplaces.ca/en/rep-reg/place-lieu.aspx?id=7576&pid=0

- The Ontario Heritage Trust Online Plaque Guide (https://www.heritagetrust.on.ca/en/index.php/site-search?fields%5Bkeywords%5D=plaque+guide);
- A listing of plaques transcribed at www.readtheplaque.com;
- Parks Canada Directory of Federal Heritage Designations (https://www.pc.gc.ca/apps/dfhd/default_eng.aspx); and,
- A listing of historical plaques of Ontario maintained by Sarah J. McCabe (https://ontarioplaques.omeka.net).

One monument and five plaques were found within a three-kilometre radius from the study area.

A plaque secured to a headstone-shaped block commemorates the Willis family burial site (Image 1). It is located in the park across Lake Avenue from the subject property, approximately 45 metres from the study area. It reads:

WILLIS FAMILY BURIAL SITE.
In Memory of George Willis and his wife Jane
Natives of Ireland
Among the First Settlers of what is now known as Carleton Place in the year 1821.

A monument dedicated to and in the likeness of Captain Arthur Roy Brown was unveiled on November 29, 2020, in Lolly's Park at 200 Bridge Street, approximately 970 metres from the study area. Captain Brown was a fighter pilot in World War I, and was credited as having fired the fatal shot killing Baron Manfred von Richthofen (known as the "Red Baron"), who had 80 air combat victories against Allied Forces. By the end of his service, Cpt. Brown had a total of 10 aerial victories, and was awarded a Distinguished Service Cross and Bar. The monument consists of a rounded wall, with a statue of Cpt. Brown at one end, looking skyward and holding his Distinguished Service Cross and Bar award in his left hand, and a bronze propeller and relief of the aerial combat against von Richthofen at the center of the wall.[32]

A plaque commemorates Captain Arthur Roy Brown at Carleton Place Memorial Park, approximately 933 metres from the study area. It reads:

> *Victor in aerial combat over Baron Manfred von Richthofen, the First World War's leading fighter pilot and German national hero, Arthur Roy Brown was born at Carleton Place. In 1915 he qualified as a civilian pilot and was commissioned in the Royal Naval Air Service. In the thick of vicious air fighting in 1917-18, Brown is credited with at least 12 enemy planes, earning the Distinguished Service Cross and Bar. Though the Canadian's downing of Richthofen was contested by Australian ground gunners, the official award was given*

[32]Roy Brown Society. https://www.captroybrown.ca/statue.html
http://ontariowarmemorials.blogspot.com/2020/12/carleton-place-capt-roy-brown-statue.html

> *to Captain Brown. Overcoming severe war injuries, he returned to civilian life and later organized an air transport company which served Northern Ontario and Quebec.*
> *Ontario Heritage Foundation, an agency of the Government of Ontario.*[33]

A second plaque commemorates the founding of Carleton Place and is located in the northern corner of Centennial Park, on the corner of Flora Street and McRostie Street. It is approximately 632 metres from the study area. It reads:

> *The families of Edmond Morphy and William Moore became in 1819 the first settlers on the site of Carleton Place. About 1822 Hugh Boulton built a mill here on the Mississippi River which provided the nucleus around which a community, known as "Morphy's Falls", had become established by 1824. It also contained a saw mill, stores, a tavern, tannery, ashery and blacksmith's shop, and later a textile mill and stove foundry. A post-office named "Carleton Place" was opened in 1830. The completion of railway lines from Brockville in 1859 and Ottawa in 1870 greatly stimulated the growth of Carleton Place. It was incorporated as a village in 1870 with a population of 1200 and became a town in 1890.*

A plaque commemorating the Findlay foundry was erected in 1978 in Findlay Park on the opposite side of the river, the site of the original foundry established by David Findlay. It is located at 48 Charlotte Street, behind the home of David Findlay, and is 994 metres from the study area. It reads:

> *This park is the site of the small foundry started by David Findlay, a Scottish immigrant, in 1860. Operated by himself, his sons, David and William, and their brothers John and Thomas, and by grandsons and great grandsons, the business grew to be one of the town's main industries, widely known for its stoves and furnaces. It operated continuously in the large plant across High Street, from 1901 to 1972. The land for this park was donated by the Findlay family and relatives in memory of their predecessors and the many faithful employees who served the company so well.*[34]

A second plaque commemorating the Findlay foundry is found at 170 High Street, approximately 710 metres from the study area. This plaque describes the history of the company.

4.5 Cemeteries

The presence of historical cemeteries in proximity to a parcel undergoing archaeological assessment can pose archaeological concerns in two respects. First, cemeteries may be associated with related structures or activities that may have become part of the

[33]"Memorials in Ottawa", http://ottmem.blogspot.com/2016/10/roy-brown-plaque.html
[34]Linda Seccaspina. "The Inner Remains of the Findlay Foundry", https://lindaseccaspina.wordpress.com/2016/04/04/the-inner-remains-of-findlay-foundry/

archaeological record, and thus may be considered features indicating archaeological potential. Second, the boundaries of historical cemeteries may have been altered over time, as all or portions may have fallen out of use and been forgotten, leaving potential for the presence of unmarked graves. For these reasons, the background research conducted for this assessment included a search of available sources of information regarding historical cemeteries. For this study, the following sources were consulted:

- A complete listing of all registered cemeteries in the province of Ontario maintained by the Consumer Protection Branch of the Ministry of Consumer Services (last updated 06/07/2011);
- Field of Stones website (http://freepages.history.rootsweb.ancestry.com/~clifford/);
- Ontario Cemetery Locator website maintained by the Ontario Genealogical Society (https://vitacollections.ca/ogscollections/2818487/data?g=d);
- Ontario Headstones Photo Project website (https://canadianheadstones.ca/wp/cemetery-lookup/); and,
- Available historical mapping and aerial photography.

No known cemeteries were located within or adjacent to the study area.[35] The closest cemetery is Saint Mary's Roman Catholic Cemetery, also known as Holy Name of Mary, located at 552 Town Line Road, on Lot 13, Concession 9 of Beckwith, approximately 1.69 kilometres east of the study area. Additionally, the Willis Family Plot is purported to be within Riverside Park, roughly 45 metres from the study area; a plaque commemorates the site (see Section 4.4 and Image 1).

4.6 Mineral Resources

The presence of scarce mineral resources on or near to a property may indicate potential for archaeological resources associated with both pre-Contact and post-Contact exploration and exploitation. For this reason, the background research conducted for the assessment includes a search of available sources of information on the locations of outcrops of rare and highly valued minerals, such as quartz, chert, ochre, copper, and soapstone, as well as minerals sought out by post-Contact prospectors and miners for more industrial-scale exploitation (i.e. gold, copper, iron, mica, etc.). Useful tools in this search are provided by databases maintained by the Ontario Geological Survey and the Ministry of Northern Development and Mines, including:

- *Abandoned Mines Information System* which contains a list of all known abandoned and inactive mine sites and associated features in the Province;

[35]It should be noted that the research undertaken as part of this Stage 1 archaeological assessment is unlikely to identify the potential for the presence of unrecorded burial plots, such as those of individual families on rural properties. See Section 7.0 of this report for information regarding compliance with provincial legislation in the event that human remains are identified during future development.

- *Mining Claims* which contains a list of all active claims, alienations, and dispositions;
- *Mineral Deposits Inventory* which contains a list of known mineral occurrences of economic value in the Province; and,
- *Bedrock Geology Data Set*, which shows the distribution of bedrock units and illustrates geologic rock types, major faults, iron formations, kimberlite intrusions, and dike swarms.

A review of the above-mentioned databases revealed no cases of mineral deposits within 1 km of the study area.

4.7 Local Environment

The assessment of present and past environmental conditions in the region containing the study area is a necessary component in determining the potential for past occupation as well as providing a context for the analysis of archaeological resources discovered during an assessment. Factors such as local water sources, soil types, vegetation associations and topography all contribute to the suitability of the land for human exploitation and/or settlement. For the purposes of this assessment, information from local physiographic, geological and soils research has been compiled to create a picture of the environmental context for both past and present land uses.

The physiography and distribution of surficial material in this area are largely the result of glacial activity that took place in the Late Wisconsinan and Holocene periods. The Late Wisconsinan, which lasted from approximately 23,000 to 10,000 years before present, was marked by the repeated advance and retreat of the massive Laurentide Ice Sheet (Barnett 1992 in Lee 2013). As the ice advanced, debris from the underlying sediments and bedrock accumulated within and beneath the ice. The debris, a mixture of stones, sand, silt, and clay, was deposited over large areas as till and associated stratified deposits. During deglaciation, as the Late Wisconsinan ice margin receded to the north, glacial lake waters in the Lake Ontario basin expanded into the Ottawa River valley, almost as far north as Ottawa, creating Glacial Lake Iroquois. With much of the region isostatically depressed below sea level, proglacial freshwater lakes developed at the ice margin. The uncovering of the St. Lawrence River valley, which occurred between 12,100 and 11,100 years ago, caused water levels to drop in the Lake Ontario basin and allowed seawater to inundate the depressed Ottawa and upper St. Lawrence River valley areas, forming the Champlain Sea (Lee 2013). This inland sea has left numerous traces of its existence, in the form of beaches, deltas, and plains. In the latter case, the locations of what were formerly deep marine basins became the collection points for a thick succession of clays and silts. By 9,600 BP, the salinity of the Champlain Sea is thought to have dropped to the point that these waters could support a variety of freshwater species (during a period where this body of water is referred to as Lampsilis Lake), before continued isostatic uplift

resulted in the establishment of the present drainage pattern by about 4,700 BP (ASI and GII 1999:41).

The study area is situated within the western extent of the Smiths Falls Limestone Plain physiographic region which is characterized by shallow soils over flat-lying Beekmantown group limestones (Chapman and Putnam 1984:200). Glaciomarine plain, delta and beach deposits are common in this region, as are bogs throughout the low-lying areas. Elevations and lowlands present were created by bedrock faulting and depressions (Lee 2013).

Surficial geological mapping, completed at a 1:50,000 scale, indicates that the study area is underlain by Paleozoic bedrock including limestones, dolomites, sandstones and occasional localized pockets of shale (Map 6). The Paleozoic bedrock often presents as bare tabular outcrops, sometimes underneath Quaternary sediments that can be up to 1 m in thickness (Richard 1990). Topographic mapping at 2 m contours shows the study area is generally level and stands around 138 masl (see Map 6).

The soil survey of Lanark County, completed at a 1:50,000 scale, shows the subject property as being within an urban area which was formerly surveyed as being composed of soils of Tennyson sandy loam – shallow phase (see Map 6). A Grey-Brown Podzolic soil, Tennyson sandy loam – shallow phase is composed of sandy loam till, 18 inches to 36 inches deep over sandstone, and is generally well-draining (Hoffman et al. 1967).

The study area lies within the Upper St. Lawrence (L.2) section of the Great Lakes-St. Lawrence Forest Region. Deciduous trees dominate with sugar maple, beech, yellow birch, red maple, basswood, white ash, largetooth aspen, and red and bur oaks trees being the primary cover type, though eastern hemlock, eastern white pine, white spruce, and balsam fir are also found in areas of shallow, acidic or eroded soils (Rowe 1972:94). The area would have been cleared of its original forest cover with the intensification of Euro-Canadian settlement and extensive logging in the early nineteenth century.

The study area lies within the Carleton Place Dam subwatershed of the Mississippi River watershed, which is a member of the Central Ottawa River watershed of the Great Lakes – St. Lawrence River primary watershed. The Mississippi River drains over 250 lakes and wetlands. Two hundred kilometers in length, the river runs from its headwaters at Mazinaw Lake into the Ottawa River near Fitzroy Harbour (Mississippi Valley Conservation Authority 2022). The Mississippi watershed covers a large area with a range of landscapes. The west is dominated by the Canadian Shield while the east is characterized by Precambrian and Paleozoic bedrock formations where shale, limestone and sandstone plains are the norm. The west end of the watershed in the Canadian Shield is very rugged and features numerous lakes, smaller rivers and forests. The central and eastern portions of the watershed see the Mississippi River pass through many small

villages as well as a mixture of farmland and woodlands, and fast-growing urban centres such as Carlton Place (Mississippi Valley Conservation Authority 2013:5).

5.0 STAGE 1 ARCHAEOLOGICAL ASSESSMENT

This section of the report includes an evaluation of the archaeological potential within the study area, in which the results of the background research described above are synthesized to determine the likelihood of the property to contain significant archaeological resources.

5.1 Optional Property Inspection

In addition to the above research, Past Recovery completed an optional site inspection on May 16th, 2022. The weather was overcast, with a high of 22 degrees Celsius. This inspection was conducted according to the archaeological fieldwork standards outlined in *Standards and Guidelines for Consultant Archaeologists* (MTCS 2011), with field conditions and features influencing archaeological potential documented through digital photography. The complete Stage 1 photographic catalogue is included as Appendix 1 and the locations and orientations of all photographs referenced in this section of the report are shown on Map 7. As per *Terms and Conditions for Archaeological Licences* in Ontario, curation of all photographs generated during the Stage 1 archaeological assessment is being provided by Past Recovery pending the identification of a suitable repository. An inventory of the records generated during the inspection is provided below in 5.2 Evaluation of Archaeological Potential

The evaluation of the potential of a particular parcel of land to contain significant archaeological resources is based on the identification of local features that have demonstrated associations with known archaeological sites. For instance, archaeological sites associated with pre-Contact settlements and land uses are typically found in close physical association with environmental features such as sources of potable water, transportation routes (navigable waterways and trails), accessible shorelines, areas of elevated topography (i.e. knolls, ridges, eskers, escarpments, and drumlins), areas of

Table 2. The property inspection has been used to supplement the background information to help inform the archaeological potential model developed below.

The site visit confirmed the conditions obvious in the 2019 aerial image used to define the study area (see Map 2) and noted other natural features or disturbance affecting the archaeological potential of the property (Images 2 to 23). The study area consisted of a large extant residential building, a driveway, and a shed in the northeastern third; a shed, a garage, a large gazebo, a tile bed, and a large, curved driveway in the central third; and an open grassed area in the southwestern third. The northwestern edge of the property boundary was lined with lampposts which have underground wiring. Additionally, several fire hydrants follow the northwest edge just outside the study area boundary, indicating the presence of underground utility lines. The central and southwestern thirds of the study area contained small patches of visible bedrock (see Images 9 and 15).

5.2 Evaluation of Archaeological Potential

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Table 2. Inventory of the Stage 1 Documentary Record.

Type of Document	Description	Number of Records	Location
Photographs	Digital photographs documenting the subject property and conditions at the time of the property survey	61 digital photographs	On Past Recovery computer network – file PR22-022
Field Notes	Field notes from the site visit	1 digital file page	On Past Recovery computer network – file PR22-022

sandy and well-drained soils, distinctive land formations (i.e. waterfalls, rock outcrops, caverns, mounds, and promontories and their bases), as well as resource-rich areas (e.g. migratory routes, spawning areas, scarce raw materials, etc.). Similarly, post-Contact archaeological sites are often found in association with many of these same environmental features, though they are also commonly connected with known areas of early Euro-Canadian settlement, early historical transportation routes (e.g. roads, trails, railways, etc.), and areas of early Euro-Canadian industry (i.e. the fur trade, logging and mining). For this reason, assessments of the potential of a particular parcel of land to contain post-Contact archaeological sites rely heavily on historical and archival research, including reviews of available land registry records, census returns and assessment rolls, historical maps, and aerial photographs. The locations of previously discovered archaeological sites can also be used to shed light on the chances that a particular location contains an archaeological record of past human activities.

Archaeological assessment standards established in the *Standards and Guidelines for Consultant Archaeologists* (MTCS 2011) specify which factors, at a minimum, must be considered when evaluating archaeological potential. Licensed consultant archaeologists are required to incorporate these factors into potential determinations and account for all features on the property that can indicate the potential for significant archaeological sites. If this evaluation indicates that any part of a subject property exhibits potential for

archaeological resources, the completion of a Stage 2 archaeological assessment is commonly required prior to the issuance of approvals for activities that would involve soil disturbances or other alterations.

The *Standards and Guidelines for Consultant Archaeologists* (MTCS 2011) also establish minimum distances from features of archaeological potential that must be identified as exhibiting potential for sites. For instance, this includes all lands within 300 metres of primary and secondary water sources, past water sources (i.e. glacial lake shorelines), registered archaeological sites, areas of early Euro-Canadian settlement, or locations identified as potentially containing significant archaeological resources by local histories or informants. It also includes all lands within 100 metres of early historic transportation routes (e.g. roads, trails, and portage routes). Further, any portion of a property containing elevated topography, pockets of well-drained sandy soils, distinctive land formations, resource-rich/harvesting areas, and/or previously identified cultural heritage resources (i.e. built heritage properties and/or cultural heritage landscapes that may be associated with significant archaeological resources) must also be identified as exhibiting archaeological potential.

5.3 Analysis and Conclusions

The background research undertaken for this assessment indicates that portions of the subject property exhibit potential for the presence of significant archaeological resources associated with pre-Contact settlement and/or land uses. Specifically:

- All of the study area lies within 300 metres of the Mississippi River (a tributary of the Ottawa River, a major pre-Contact transportation corridor), which offered a source of potable water and food, making the entire area a suitable location for campsites for pre-Contact hunter-gatherer populations;
- The Mississippi River drainage system would have been inhabited and used by pre-Contact hunter-gatherer populations and was indicated to have been used by Algonquin communities up to and following the Contact period; and,
- Soils in the study area were originally well-drained sandy loam, of a type preferred for pre-Contact campsites.

The study area also exhibits characteristics that indicate potential for the presence of archaeological resources associated with post-Contact settlement and/or land uses. Specifically:

- All of the study area lies within 300 metres of the Mississippi River, which continued to serve as a transportation corridor through the post-Contact era, including for nineteenth century lumbering operations;
- The entirety of the study area is within 300 m of early Euro-Canadian settlement identified on the nineteenth century Walling and Belden maps of Beckwith Township (published respectively in 1863 and 1880);

- All of the study area lies within 300 m of Lake Avenue West, a nineteenth century transportation corridor that is shown as having been opened on the nineteenth century maps of Carleton Place; and,
- While there is no evidence that any structure was built on the property before 1927, land registry records indicate personal ownership of the property as early as 1824, allowing for the possibility that one or more homesteads or structures may have been built on the property during that time. The style of the extant residence suggests a late nineteenth or early twentieth century date for this structure.

Given all of the features in the landscape providing an indication of archaeological potential, the evaluation began from an assumption that all of the property retained archaeological potential. This study also, however, included a review of available sources of information (i.e. high resolution aerial photographs and satellite imagery) to determine if part or all of the study area had been subject to deep and intensive soil disturbance (i.e. quarrying, road construction, major landscaping involving grading below topsoil, former building footprints, sewage and infrastructure development, etc.) in the recent past, as these activities would have severely damaged the integrity of or removed any archaeological resources that might have been present. Further, the review included an assessment of the property for additional factors that might limit archaeological potential such as land with permanent water saturation, exposed bedrock or steep slope of greater than 20 degrees in elevation.

As has been noted above, portions of the property consisted of built infrastructure indicative of deep disturbance, including the foot-prints of the extant residential building and associated tile or septic bed, the existing and former driveways or access roads, the existing parking areas, and existing and former utility lines. Evidence for these attributes was clearly visible within the study area, confirming disturbance focused in the central and northeastern portions. In addition, while it is uncertain whether any structures had been erected within the study area before 1927, it is clear from historical twentieth century aerial photographs that the central and northeastern thirds of the study area have been disturbed by the construction, expansion and removal of various structures and driveways over this period (see Maps 4 and 5). The southestern third of the subject property, however, appears to have lain vacant and relatively undisturbed by more recent activities.

The archaeological potential for the study area has been depicted on Map 7. Based on the historical sources and imagery reviewed above it was determined that most of the northeastern third of the study area had been deeply disturbed, and therefore did not retain archaeological potential. The central third of the subject property appeared to have been less disturbed by twentieth century activities and therefore retained low to high areas of archaeological potential requiring either 5 m interval testing or judgemental testing to confirm disturbance during a Stage 2 archaeological assessment. The southwestern third of the property was found to retain a high level of archaeological

potential. Thus most of the study area was found to require Stage 2 archaeological field assessment to determine the presence or absence of archaeological resources prior to any planned or future disturbance.

5.4 Stage 1 Recommendations

The results of the background research discussed above have indicated that portions of the study area exhibit potential for the presence of significant archaeological resources. Accordingly, it is recommended that:

1) The portions of the study area that have been determined to exhibit archaeological potential should be subject to Stage 2 archaeological assessment prior to the initiation of below-grade soil disturbances or other alterations (see Map 7).

2) Any future Stage 2 archaeological assessment should be undertaken by a licensed consultant archaeologist, in compliance with *Standards and Guidelines for Consultant Archaeologists* (MTCS 2011). As the study area is non-agricultural land, all portions identified as exhibiting archaeological potential should be assessed by means of a shovel test pit survey conducted at 5 metre intervals.

6.0 STAGE 2 ARCHAEOLOGICAL ASSESSMENT

This section of the report describes the methodology used and results of the Stage 2 property survey conducted to determine whether the subject property contains significant archaeological resources.

6.1 Field Methods

The Stage 2 archaeological fieldwork was completed on, June 29th, 2022, by a crew of three people consisting of a licensed field director, assistant field director and a field technician. Fieldwork was conducted according to archaeological fieldwork standards outlined in *Standards and Guidelines for Consultant Archaeologists* (MTCS 2011). Weather conditions were initially sunny, becoming overcast with a high of 18 degrees C. These conditions permitted adequate to excellent visibility for the identification, documentation, and, where appropriate, recovery of archaeological resources.

In order to ensure full coverage during the Stage 2 property survey, the Past Recovery field crew used 'Mapit Pro' GIS software on a tablet loaded with detailed satellite imagery overlain with the study area. This digital mapping interface, along with a high accuracy, GIS-mapping-grade Global Navigation Satellite System (GNSS) receiver, allowed the field crew to accurately delimit the study area in relation to their 'real time' position and record features of interest. The GNSS unit employed for this purpose was a Trimble Catalyst DA1 antennae connected to a Samsung tablet running Trimble Mobile Manager software and receiving Trimble RTX corrections. While in use, the receiver reported accuracies within the range of plus or minus 2 m.

The study area was comprised of modern residential infrastructure which included a gazebo, garage, driveway, and sheds as well as generally flat maintained lawn. As such the Stage 2 archaeological assessment consisted of shovel test pit survey on a 5 m grid where possible (Images 24 to 27; Map 9). Disturbed areas of the subject property were tested judgmentally to confirm disturbance. Survey coverage and field conditions pertaining to refinements of the archaeological potential determination as the assessment progressed were digitally recorded on project mapping and estimates of survey coverage are provided in Table 3.

Table 3. Estimates of Survey Coverage during the Stage 2 Assessment.

Landscape Unit	Survey Method & Interval Used	Area Covered	Percentage of Study Area
Maintained lawn	Shovel test pit survey at 5 m intervals	0.289 hectares/ 0.715 acres	81.87%
Disturbed area	Tested judgmentally	0.064 hectares / 0.157 acres	18.13%

The terrain across the undisturbed portions of the study area consisted of generally flat maintained lawn. For the purposes of facilitating description, grid north was aligned with true north. Apart from where indicated, all test pit survey was completed at 5 m intervals using shovels and trowels, with back-dirt screened through 6 mm hardware mesh (see Images 24 to 27). Shovel test pits were at least 30 cm in diameter and excavation continued for 5 cm into sterile subsoil. Testing was continued to within 1 m of all standing structures. All pits were examined for soil stratigraphy, cultural features, and/or evidence of deep and intensive disturbance. Sample test pits were documented with digital photographs and field notes. Once all required recording had been completed, all test pits were backfilled. Soil layers within test pits were assigned lot numbers in the order of appearance. As no archaeological resources were found, no test pit intensification was undertaken.

Field activities were recorded through field notes, digital photographs, and digital mapping. A catalogue of the material generated during the Stage 2 property survey is included below in Table 4. The complete photographic catalogue is included as Appendix 1, and the locations and orientations of all photographs referenced in this section of the report are shown on Map 9. As per *Terms and Conditions for Archaeological Licences in Ontario*, curation of all photographs and field notes generated during the Stage 2 archaeological assessment is being provided by Past Recovery pending the identification of a suitable repository.

Table 4. Inventory of the Stage 2 Documentary Record.

Type of Document	Description	Number of Records	Location
Photographs	Digital photographs documenting the Stage 2 fieldwork	17 photographs	On Past Recovery computer network – file PR22-022
Mapping data	Shapefiles (*.shp)	3 files "PR22-022 stg2 judgemental testing.shp" "PR22-022 stg2 shovel testing 5m.shp" "Stg2_Filed_Photos.gpkg"	On Past Recovery computer network – file PR22-022
Field Notes	Scanned and digital notes on the Stage 2 fieldwork; test pit forms	11 pages (2 *.pdf files)	On Past Recovery computer network – file PR22-022

6.2 Fieldwork Results

Fieldwork commenced parallel to Lake Avenue West in the southwest corner of the property and progressed eastward. Disturbed soils were encountered throughout the

northeastern portion of the study area in association with modern development of the extant structures. The soil stratigraphy varied across the study area. Where there were undisturbed soils in the southwestern portion of the property the soil was comprised of approximately 27 cm of brown sandy loam topsoil over yellow/brown sandy loam subsoil (Image 28). The soil stratigraphy towards the centre of the property, near the location of the razed possible barns, contained approximately 23 cm of pale brown sandy loam fill containing modern refuse, followed by roughly 13 cm of compact brown sandy loam buried topsoil and yellow/brown sandy loam subsoil (Image 29). The test pits in the northeastern half of the study area amongst the extant structures, driveway, and gravel parking pad contained bedrock or impassible rock fill in a brown sandy loam matrix (Images 30 and 31).

6.3 Record of Finds

No archaeological resources of cultural heritage value or interest were found during the Stage 2 survey.

6.4 Analysis and Conclusions

The Stage 2 archaeological assessment consisted of a shovel test pit survey at 5 m intervals across all portions of the study area determined to exhibit archaeological potential; the remaining areas were judgmentally tested to confirm disturbance (see Map 9). As mentioned above, no archaeological resources were found over the course of this assessment.

6.5 Stage 2 Recommendations

On the basis of the results of the Stage 2 property survey discussed above, it is recommended that:

1) There are no further archaeological concerns for the study area as illustrated on Map 8.

2) In the event that future planning results in the identification of additional areas of impact beyond the limits of the present Stage 2 study area, further Stage 2 archaeological assessment may be required. It should be noted that impacts include all aspects of the proposed development causing soil disturbances or other alterations, including additional temporary property needs (i.e. access roads, staging/lay down areas, associated works etc.).

3) Any future Stage 2 archaeological assessment should be undertaken by a licensed consultant archaeologist, in compliance with *Standards and Guidelines for Consultant Archaeologists* (MTCS 2011).

The reader is also referred to Section 7.0 below to ensure compliance with relevant provincial legislation and regulations that may relate to this project.

7.0 ADVICE ON COMPLIANCE WITH LEGISLATION

In order to ensure compliance with relevant Provincial legislation as it may relate to this project, the reader is advised of the following:

1) This report is submitted to the Ministry of Tourism, Culture and Sport as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism, Culture and Sport, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

2) It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeological Reports referred to in Section 65.1 of the *Ontario Heritage Act*.

3) Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (1) of the *Ontario Heritage Act*.

4) The *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 requires that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.

5) Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48 (1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed from them, except by a person holding an archaeological licence.

8.0 LIMITATIONS AND CLOSURE

Past Recovery Archaeological Services Inc. has prepared this report in a manner consistent with that level of care and skill ordinarily exercised by members of the archaeological profession currently practicing under similar conditions in the jurisdiction in which the services are provided, subject to the time limits and physical constraints applicable to this report. No other warranty, expressed or implied, is made.

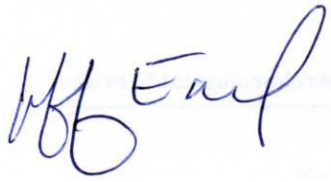
This report has been prepared for the specific site, design objective, developments and purpose prescribed in the client proposal and subsequent agreed upon changes to the contract. The factual data, interpretations and recommendations pertain to a specific project as described in this report and are not applicable to any other project or site location.

Unless otherwise stated, the suggestions, recommendations and opinions given in this report are intended only for the guidance of the client in the design of the specific project.

Special risks occur whenever archaeological investigations are applied to identify subsurface conditions and even a comprehensive investigation, sample and testing program may fail to detect all or certain archaeological resources. The sampling strategies in this study comply with those identified in the Ministry of Tourism, Culture and Sport's *Standards and Guidelines for Consultant Archaeologists* (2011).

The documentation related to this archaeological assessment will be curated by Past Recovery Archaeological Services Inc. until such a time that arrangements for their ultimate transfer to an approved and suitable repository can be made to the satisfaction of the project owner(s), the Ontario Ministry of Tourism, Culture and Sport and any other legitimate interest group.

We trust that this report meets your current needs. If you have any questions or if we may be of further assistance, please do not hesitate to contact the undersigned.



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Principal
Past Recovery Archaeological Services Inc.

9.0 REFERENCES

Adams, Nicholas
1986 Iroquois Settlement at Fort Frontenac in the Seventeenth and Early Eighteenth Centuries. *Ontario Archaeology* 47:5-20.

Adams Heritage
2016 *An Archaeological Assessment (Stage 2) of the Proposed Carleton Place Development, Part Lot 12, Concession 11, Geographic Township of Beckwith, Township of Beckwith, Lanark County*. Report on file, Ontario Ministry of Tourism, Culture and Sport, Toronto.
2015 *An Archaeological Assessment (Stage 1) of the proposed Carleton Place Development, Part Lot 12, Concession 11, Geographic Township of Beckwith, Township of Beckwith, Lanark County*. Report on file, Ontario Ministry of Tourism, Culture and Sport, Toronto.

Algonquins of Ontario (AOO)
2017 *Relic Shorelines in Algonquin Traditional Territory in Ontario.* Report on file, Algonquins of Ontario Consultation Office, Pembroke, ON.
n.d. *History of the Algonquins.* http://www.tanakiwin.com/wpsystem/uploads/2013/10/a-History-of-the-Algonquins.pdf

Archaeological Services Inc. (ASI)
2019 *Stage 1 Archaeological Assessment Carleton Place Bridges Lots 14-15, Concession 12 (Former Beckwith Township) Town of Carleton Place County of Lanark, Ontario*. Report on file, Ontario Ministry of Tourism, Culture and Sport, Toronto.

Birch, Jennifer
2015 Current Research on the Historical Development of Northern Iroquoian Societies. *Journal of Archaeological Research*, Vol.22, No. 4.

Birch, Jennifer and Ronald F. Williamson
2013 *The Mantle Site: An Archaeological History of an Ancestral Wendat Community.* AltaMira, Lanham, MD.

Brown, Howard Morton
1984 *Lanark Legacy-Nineteenth Century Glimpses of an Ontario County.* The Corporation of the County of Lanark, Perth, ON.
1969 *Founded Upon a Rock: Carleton Place Recollections*. Mortimer Limited Prints, Ottawa.

Canada
1891 *Indian Treaties and Surrenders from 1690 to 1890 - in Two Volumes.* Volume 1. Brown Chamberlain, Ottawa.

Chapman, L. J., and D. F. Putnam
1984 *The Physiography of Southern Ontario.* Third Edition. Ontario Geological Survey Special Volume 2. Ministry of Natural Resources, Toronto, ON.

Clermont, Norman
1999 The Archaic Occupation of the Ottawa Valley. In *La préhistoire de l'Outaouais / Ottawa Valley Prehistory,* edited by Jean-Luc Pilon, pp. 43-54. L'Écomusée de Hull and Outaouais Historical Society, Gatineau, QC.

Clermont, Norman, C. Chapdelaine and J. Cinq-Mars, editors
2003 *Île aux Allumettes, L'Archaïque supérieur dans l'Outaouais.* Paléo-Québec 30. Recherches amérindiennes au Québec, Montréal, and Musée Canadien des civilisations, Gatineau, QC.

Crawford, Gary, Jessica L. Lytle, Ronald F. Williamson, and Robert Wojtowicz
2019 An Early Woodland Domesticated Chenopod (Chenopodium Berlandieri Subsp. Jonesianum) Cache from the Tutella Heights Site, Ontario, Canada. *American Antiquity* 84(11):43-157.

Edwards, F.B.
1984 *The Smiling Wilderness: An Illustrated History of Lennox and Addington County.* Camden House Publishing Limited, Camden East, ON.

Ellis, Christopher J.
2013 Before Pottery: Paleoindian and Archaic Hunter-Gatherers. In *Before Ontario: The Archaeology of a Province,* edited by Marit Munson and Susan Jamieson, pp. 35-47. McGill-Queen's University Press, Montreal.

Ellis, Christopher J. and Brian Deller
1990 Paleo-Indians. In *The Archaeology of Southern Ontario to A.D. 1650,* edited by Christopher J. Ellis and Neal Ferris, pp. 37-64. Occasional Publications of the London Chapter of the Ontario Archaeological Society, Publication Number 5. Ontario Archaeological Society, London, ON.

Fox, William
1990 The Middle Woodland to Late Woodland Transition. In *The Archaeology of Southern Ontario to A.D. 1650,* edited by Chris Ellis and Neal Ferris, pp. 171–188. Occasional Publications of the London Chapter of the Ontario Archaeological Society, Publication Number 5. Ontario Archaeological Society, London, ON.

Fox, W.A., and C. Garrad
2004 Hurons in an Algonquian Land. *Ontario Archaeology* 77(78):121–134.

Fox, W.A. and Jean-Luc Pilon
2016 Evidence for Sixteenth-Century Exchange: The Ottawa and Upper Saint Lawrence Waterways. In *Contact in the 16th Century: Networks among Fishers, Foragers and Farmers,* edited by Brad Loewen and Claude Chapdelaine, pp. 199-215, Mercury Series Archaeology Paper 176. Gatineau, QC: Canadian Museum of History, Gatineau, QC and University of Ottawa Press, Ottawa.

Gaudreau M. and L. Lesage
2016 Understanding Ethnicity and Cultural Affiliation: Huron-Wendat and Anthropological Perspectives. *Ontario Archaeology* 96:6-16.

Geddes, Hilda
1992 *The Canadian Mississippi River*. The General Store Publishing House Inc., Burnstown, Ontario.

Gidigaa Migizi
2018 *Michi Saagiig Nishnaabeg: This is Our Territory.* Arp Books, Winnipeg.

Gitiga Migizi and Julie Kapyrka
2015 Before, During, and After: Mississauga Presence in the Kawarthas. In Peterborough Archaeology, edited by Dirk Verhulst, pp.127-136. Peterborough Chapter of the Ontario Archaeological Society, Peterborough.

H. Belden & Co.
1880 Illustrated Historical Atlas of Lanark County, 1880. In *Historical Atlas of Lanark & Renfrew Counties, Ontario 1880-1881.* Compiled and reprinted 1972, edited by Ross Cumming. Richardson, Bond & Wright Limited, Owen Sound.

Hanewich, Kim
2009 *History of the Algonquin, Omàmiwinini: The Invisible People.* Unpublished manuscript produced for Omàmiwinini Pimàdjowin – The Algonquin Way of Life Cultural Centre. Accessed on-line at http://www.thealgonquinway.ca/pdf/Omamininini-Invisible-People/pdf

Hart, J.P. and W. Engelbrecht
2012 Northern Iroquoian Ethnic Evolution: A Social Network Analysis. *Journal of Archaeological Method and Theory* 19:322–349.

Heidenreich, Conrad E., and Françoise Noël
1993 France Secures the Interior, 1740-1755. In *Historical Atlas of Canada: From the Beginning to 1800* (Volume 1), edited by R. Cole Harris, pp. 102-103. University of Toronto Press, Toronto.

Hessel, P.
1993 *The Algonkin Nation: The Algonkins of the Ottawa Valley, A Historical Outline.* Kichesippi Books, Arnprior, ON.

Hill, Susan M.
2017 *The Clay We are Made of: Haudenosaunee Land Tenure on the Grand River.* Winnipeg: University of Manitoba Press, Winnipeg.

Hofman, D.W, M.H. Miller and R.E. Wicklund,
1967 *Soil Survey of Lanark County. Report No. 40 of the Ontario Soil Survey*. Research Branch Canadian Department of Agriculture and the Ontario Department of Agriculture and food.

Huitema, Marijke E.
2001 *Land of Which the Savages Stood in No Particular Need: Dispossessing the Algonquins of South-Eastern Ontario of Their Lands, 1760-1930.* Unpublished Master of Arts thesis submitted to the Department of Geography, Queen's University, Kingston.

Jamieson, James Bruce
1990 The Archaeology of the St. Lawrence Iroquoians. In *The Archaeology of Southern Ontario to A.D. 1650*, edited by Chris Ellis and Neal Ferris, pp. 385-404. Occasional Publications of the London Chapter of the Ontario Archaeological Society, Publication Number 5. Ontario Archaeological Society, London, ON

Joan Holmes & Associates, Inc.
1993 *Algonquins of Golden Lake Claim.* Eight volumes. Unpublished report prepared for the Ontario Native Affairs Secretariat, Toronto.

Johnson, Frederick
1928 The Algonquin at Golden Lake, Ontario. *Indian Notes* 5(2):173–178.

Kapyrka, Julie
2017 Remembering Original Relationships: Mississauga and Wendat. *Association of Professional Archaeologists Newsletter* New Series (1):3-12.

Kennedy, Clyde
1970 *The Upper Ottawa Valley: A Glimpse of History.* Renfrew County Council, Pembroke, ON.
1962 Archaic Hunters in the Ottawa Valley. *Ontario History* Vol. 54(2):122-128.

Konrad, V.A
1981 An Iroquois Frontier: The North Shore of Lake Ontario during the Late Seventeenth Century. *Journal of Historical Geography* 7(2):129-144.

Lainey, J.C.
2006 Reflections on Historical Links between the Huron-Wendat and the St. Lawrence Iroquoians. In *The St. Lawrence Iroquoians: Corn People*, **e**dited by R. Tremblay, pp. 128-129. Pointe-à-Callière and Éditions de l'Homme, Montreal.

Laliberté, M.
2000 *Synthèse des recherches archéologiques dans le Parc du Lac Leamy 1993-1999.* Écomusée de Hull, Gatineau, QC.

Lanark County Neighbours for Truth and Reconciliation
2019 *Colonial Expansion into Lanark & Frontenac Counties: The Petitions of Chief Pierre Shawinipinessi.* Accessed online at https://www.lanarkcountyneighbours.ca/

Lawrence, Bonita
2012 *Fractured Homeland: Federal Recognition and Algonquin Identity in Ontario.* UBC Press, Vancouver.

Lee, V. L.
2013 *Aggregate Resources Inventory of the County of Lanark, Southern Ontario.* Aggregate Resources Inventory Paper 189. Ontario Geological Survey, Sudbury, ON.

MacKay, Roderick
2016 *Spirits of the Little Bonnechere: A History of Exploration, Logging and Settlement - 1800 to 1920.* Second Edition. The Friends of Algonquin Park, Whitney, ON.

Métis National Council
n.d. *The Métis Nation.* http://www.metisnation.ca/index.php/who-are-the-métis
n.d. *Métis Historical Timeline.* http://www.metisnation.org/culture-heritage/m%C3%A9tis-timeline/

Mississippi Valley Conservation Authority
2022 Mississippi River Watershed. Mississippi Valley Conservation Authority. Accessed 12 January 2022. https://mvc.on.ca/mississippi-river-watershed/
2013 Mississippi Valley Watershed Report Card 2013: Full Report. Mississippi Valley Conservation authority. Accessed 12 January 2022. https://mvc.on.ca/wp-content/uploads/2020/08/Watershed-Report-Card-FULL-REPORT-APRIL-2013.pdf

Morrison, James
2005 Algonquin History in the Ottawa River Watershed. In *A Background Study for Nomination of the Ottawa River Under the Canadian Heritage Rivers System,* edited by Ottawa River Heritage Designation Committee, pp. 17-36. Canadian Heritage River System. Ottawa River Heritage Designation Committee, Ottawa.

Munson, M.
2013 A Land Before Ontario. In *Before Ontario: The Archaeology of a Province,* edited by Marit Munson and Susan Jamieson, pp. 21-23. McGill-Queen's University Press, Montreal.

Past Recovery Archaeological Services Inc.
2021 *Stage 1 and Stage 2 Archaeological Assessments of 166 Boyd Street, Carlton Place, Part Lot 13, Concession 11, Geographic Township of Beckwith, Lanark County.* Report on file, Ontario Ministry of Tourism, Culture and Sport, Toronto.
2017 *Stage 1 and 2 Archaeological Assessments, and Stage 3 Cemetery Study, Proposed Fifty Allan Condominiums, Part Lot 14, Concession 12, Geographic Township of Beckwith, Lanark County, Now Town of Carleton Place, Ontario.* Report on file, Ontario Ministry of Tourism, Culture and Sport, Toronto.
2011a *Stage 1 and 2 Archaeological Assessments of the J.W. Southwell Property Part Lot 12, Concession XII Geographic Township of Beckwith Lanark County*. Report on file, Ontario Ministry of Tourism, Culture and Sport, Toronto.
2011b *Stage 1 and 2 Archaeological Assessments of the Proposed Carlgate High Subdivision Part Lot 12, Concession XII Geographic Township of Beckwith Lanark County*. Report on file, Ontario Ministry of Tourism, Culture and Sport, Toronto.

Pendergast, James
1999 The Ottawa River Algonquin Bands in a St. Lawrence Iroquoian Context. *Canadian Journal of Archaeology* Vol. 23:63-136.
1972 The Lite Site: An Early Southern Division Huron Site near Belleville, Ontario. *Ontario Archaeology* No. 17:24-61.

Richard, J.-F.
2016 Territorial Precedence in Eighteenth- and Nineteenth-Century Huron-Wendat Oral Tradition. *Ontario Archaeology* 96:26-34.

Ripmeester, M.
1995 'It is Scarcely to be Believed...': The Mississauga Indians and the Grape Island Mission, 1826-1836. *The Canadian Geographer* Vol. 39(2):157-168.

Rowe, J. S.
1972 *Forest Regions of Canada.* Canadian Forestry Service, Department of the Environment, Ottawa.

Royal Commission on Aboriginal Peoples, Ottawa
1996 *Bridging the Cultural Divide: A Report on Aboriginal People and Criminal Justice in Canada.* Royal Commission on Aboriginal Peoples, Ottawa.

Sherman, Paula
2015 The Omàmiwinini. In *At Home in Tay Valley – Celebrating our 200th Anniversary,* edited by K. Rogers, pp. 27-36. Burnstown Publishing House, Burnstown, ON.
2008 *Dishonor of the Crown: The Ontario Resource Regime in the Valley of the Kiji Sìbì.* Arbeiter Ring Publishing, Winnipeg.

Spence, M., R. Pihl, and C. Murphy
1990 Cultural Complexes of the Early and Middle Woodland Periods. In *The Archaeology of Southern Ontario to A.D. 1650,* edited by Christopher J. Ellis and Neal Ferris, pp. 125-169. Occasional Publications of the London Chapter of the Ontario Archaeological Society, Publication Number 5. Ontario Archaeological Society, London, ON.

Surtees, Robert J.
1994 Land Cessions, 1763-1830. In *Aboriginal Ontario: Historical Perspectives on the First Nations,* edited by Edward S. Rogers and Donald B. Smith, pp. 92–121. Ontario Historical Studies Series. Dundurn Press, Toronto.
1982 *Indian Land Cessions in Ontario, 1763-1862: The Evolution of a System.* Unpublished Ph.D. dissertation, Department of History, Carleton University, Ottawa.

Sutton, R.
1990 *Hidden Amidst the Hills: Middle and Late Iroquoian Occupations in the Middle Trent Valley.* Occasional Papers in Northeastern Archaeology No. 3. Copetown Press, St. John's, NF.

Tremblay, Roland, editor.
2006 *The St. Lawrence Iroquoians: Corn People.* Pointe-à-Callière, Montreal Museum of Archaeology and History, Montreal.

Trigger, Bruce G.
1987 *The Children of Aataentsic: A History of the Huron People to 1660.* Two volumes. McGill-Queen's University Press, Montreal.

Warrick, Gary Arthur
2000 The Precontact Iroquoian Occupation of Southern Ontario. *Journal of World Prehistory* 14(1):415–466.

Watson, Gordon
1999 The Paleo-Indian Period in the Ottawa Valley. In *La préhistoire de l'Outaouais / Ottawa Valley Prehistory,* edited by Jean-Luc Pilon, pp. 27-42. L'Écomusée de Hull and Outaouais Historical Society, Gatineau, QC.
1990 Palaeo-Indian and Archaic Occupations of the Rideau Lakes. *Ontario Archaeology* 50:5–26.

Williams Treaties First Nations
2017 *About Williams Treaties First Nations.* http://williamstreatiesfirstnations.ca/about

Wright, James V.
1966 *The Ontario Iroquois Tradition.* National Museum of Canada, Bulletin No. 210. Anthropological Series No. 75, Ottawa.

PRIMARY DOCUMENTS:

Lanark County Land Registry Office (LCLRO):

Land Registry Abstract Index: Lot 13, Concession 11, Township of Beckwith

Library and Archives Canada (LAC):

National Map Collection (NMC):
NMC 21920 *Map of the Counties of Lanark and Renfrew Canada West: from actual surveys under the direction of H.F. Walling* (1863)

Canada Department of Natural Resources:

Topographic Map:

Map Sheet	Year	Original Scale
031F01	1939	1:63000

National Air Photo Library (NAPL):

Year	Roll#	Photo
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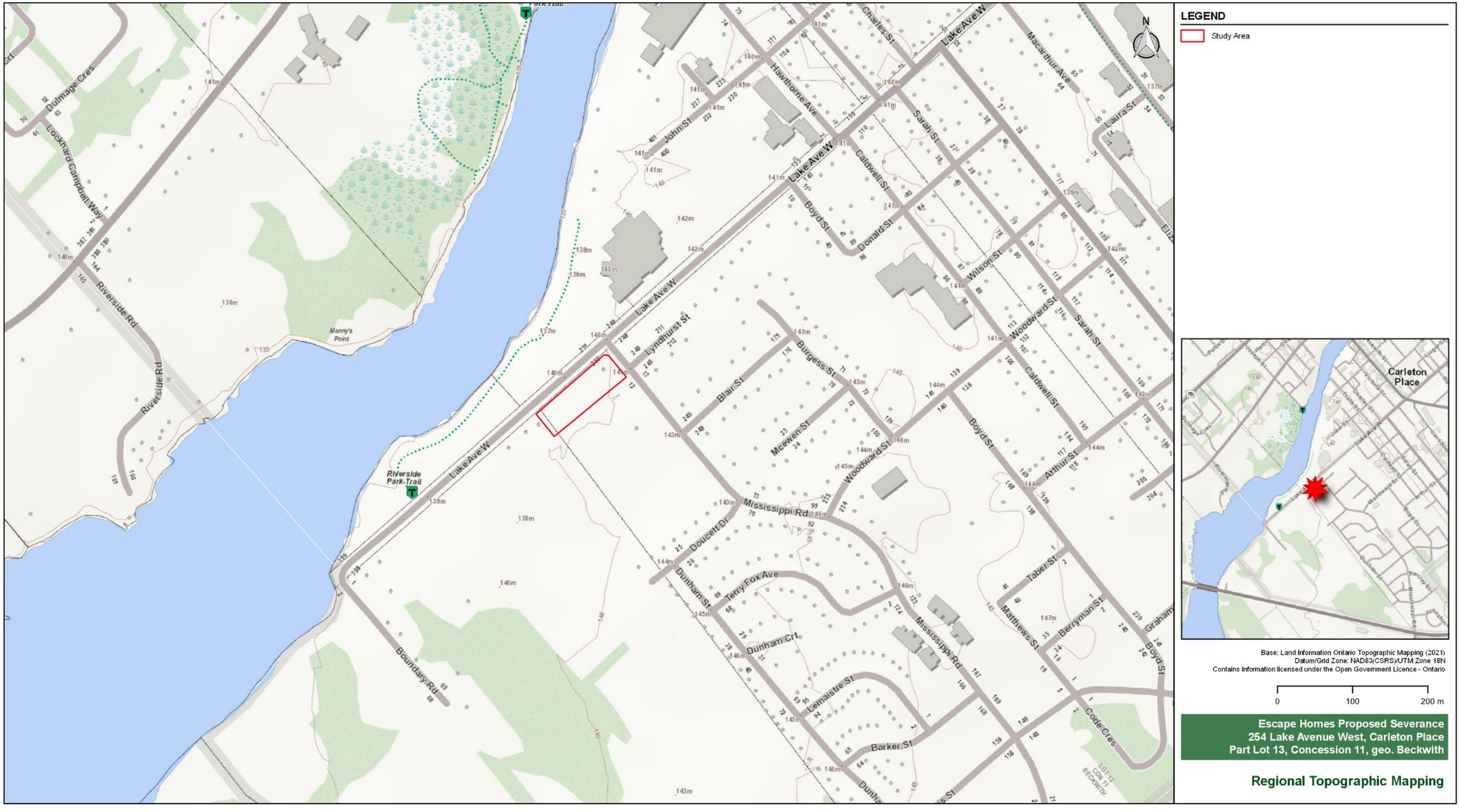
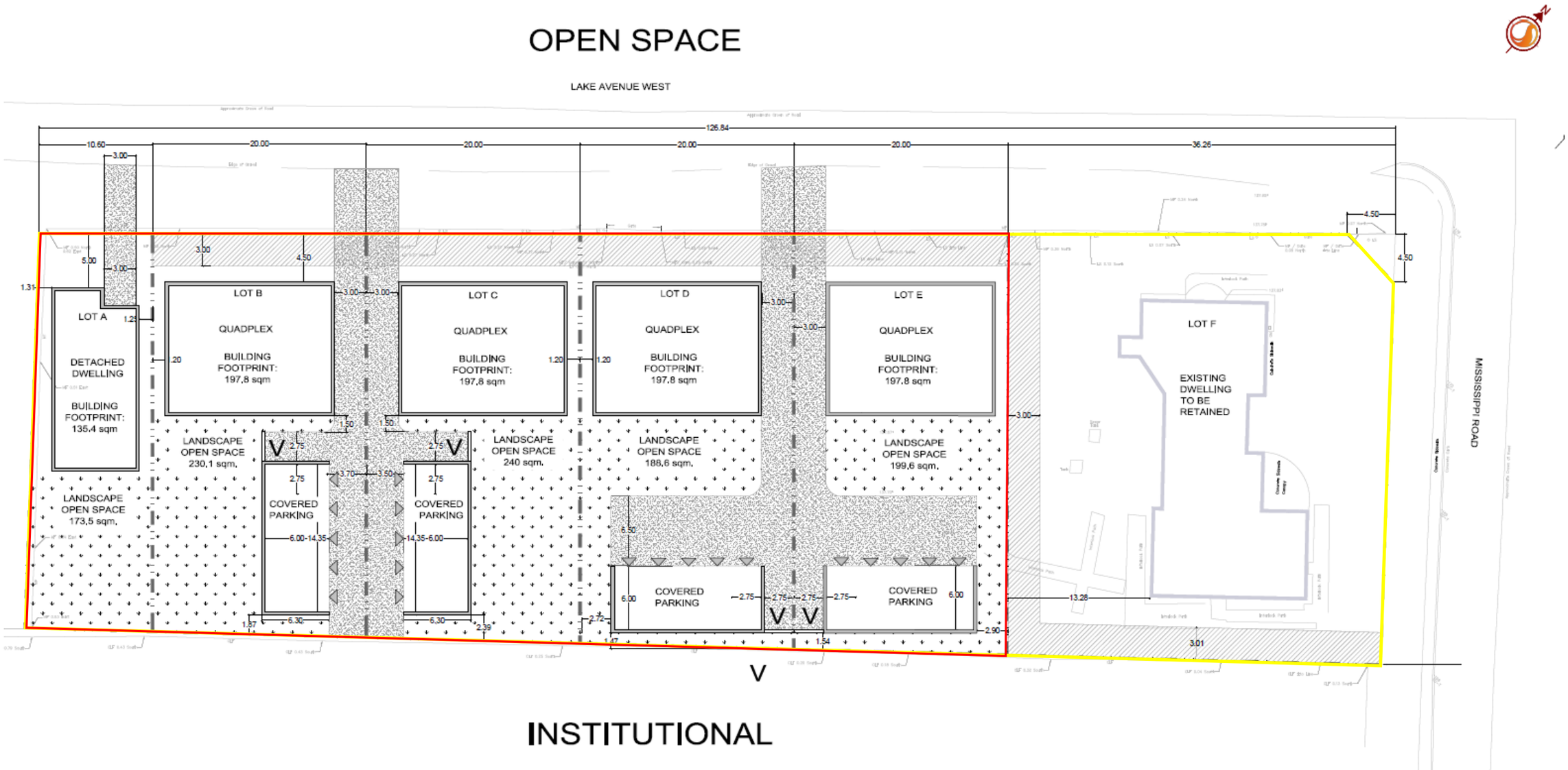
1946	A10245	435
1967	A20309	097
1973	A23192	164
1978	A24878	164

10.0 MAPS



Map 1. Location of the study area.

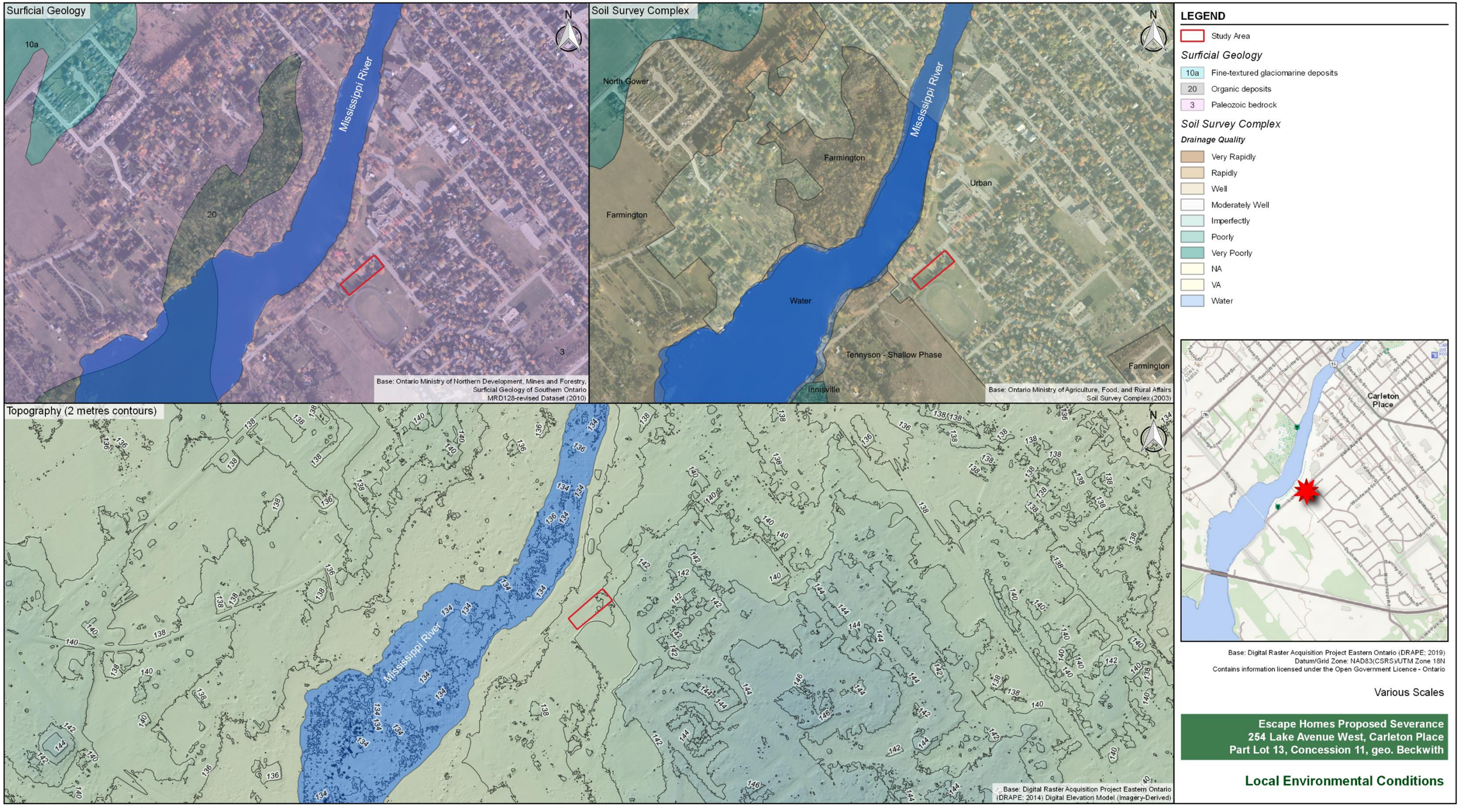
Map 2. Recent (2019) orthographic imagery showing the Stage 1 study area.



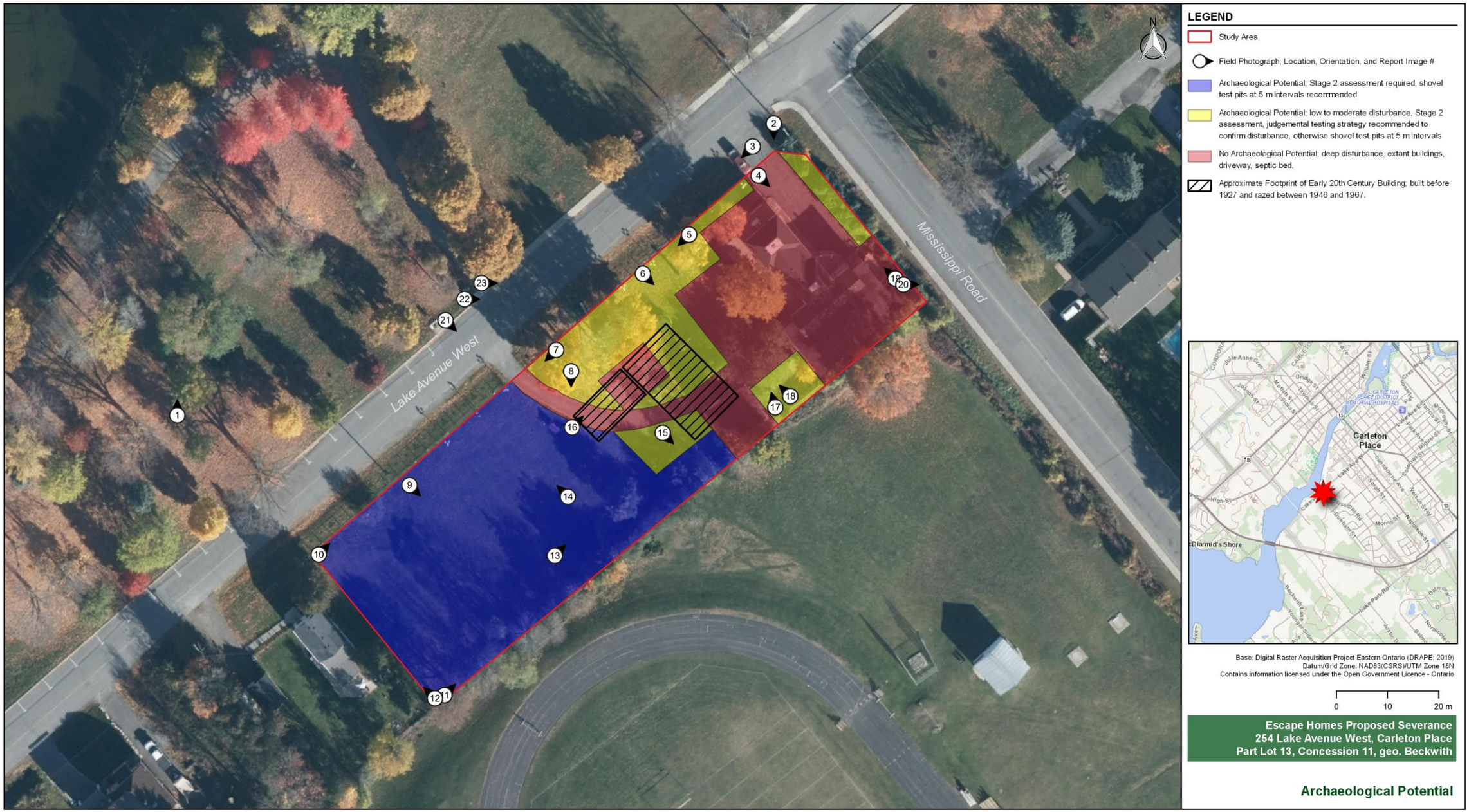
Map 3. Proposed development sketch showing the study area. (Courtesy of Stantec Consulting Ltd.) The Stage 1 study area is indicated by a yellow outline, and the Stage 2 study area by a red outline.

Map 4. Historical mapping and aerial imagery showing the approximate location of the study area.

Map 5. Historical aerial imagery showing the study area.



Map 6. Environmental mapping showing the study area.



Map 7. Recent (2019) orthographic imagery showing archaeological potential and Stage 1 field photograph locations, directions, and image numbers.

Map 8. Recent (2019) orthographic imagery showing Stage 2 assessment study area.

Map 9. Recent (2019) orthographic imagery showing the Stage 2 assessment methods and results as well as Stage 2 field photograph locations, directions, and image numbers.

11.0 IMAGES

Image 1. View of the plaque marking the Willis family burials in the park across from the property, facing north. (PR22-022D061)

Image 2. View of the extant residential building, facing south. (PR22-022D001)

Image 3. View of property edge along Lake Avenue West, facing southwest. (PR22-022D003)

Image 4. View of the driveway and extant building along the northeastern property edge, facing east-southeast. (PR22-022D005)

Image 5. View of the northwestern property edge and lampposts, facing southwest. (PR22-022D012)

Image 6. View of tile bed slope, trampoline, and extant garage, facing southeast. (PR22-022D016)

Image 7. View of the mid-property driveway and open grassed area, facing southwest. (PR22-022D019)

Image 8. View of the mid-property driveway, well cap, and shed, facing south. (PR22-022D022)

Image 9. View of the southeast corner of the property, facing south southeast. (PR22-022D025)

Image 10. View of the open grassed area, facing northeast. (PR22-022D029)

Image 11. View of the southeastern property edge, facing northeast. (PR22-022D033)

Image 12. View of the southwestern property edge, facing northwest. (PR22-022D034)

Image 13. View of the southeastern property edge near the curved driveway, facing northeast. (PR22-022D037)

Image 14. View of soil disturbance in the middle of the property, facing northwest. (PR22-022D039)

Image 15. View of bedrock and brush piles beside the garage, facing southeast. (PR22-022D040)

Image 16. View of the curved driveway bisecting the property and exposed bedrock, facing northeast. (PR22-022D041)

Image 17. View of the garden path between the garage and the extant residential building, facing north. (PR22-022D048)

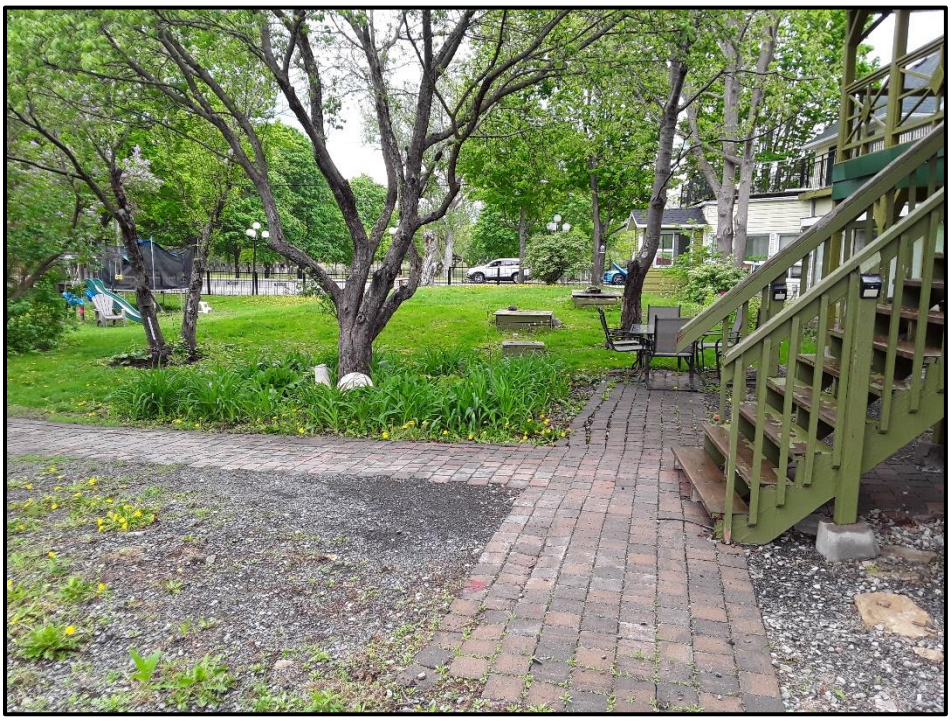


Image 18. View of the garden path and tile bed between the garage and extant residential building, facing northwest. (PR22-022D049)

Image 19. View of the driveway, deck, and staircase along the northeastern property edge, facing northwest. (PR22-022D051)

Image 20. View of the northeastern corner of property, facing northeast. (PR22-022D053)

Image 21. View of the southern half of the property, facing southeast. (PR22-022D056)

Image 22. View of the central curved driveway, facing east. (PR22-022D057)

Image 23. View of the northern half of the property, facing northeast. (PR22-022D058)

Image 24. View of field crew testing at 5 m intervals, facing west. (PR22-022D065)

Image 25. View of field crew testing at 5 m intervals, facing northeast. (PR22-022D071)

Image 26. View of field crew testing at 5 m intervals, facing northwest. (PR22-022D075)

Image 27. View of field crew testing at 5 m intervals, facing northeast. (PR22-022D078)

Image 28. View of a sample test pit in the southwestern portion of the study area showing natural soil stratigraphy (trowel pointing east), facing south. (PR22-022D062)

Image 29. View of a sample test pit towards the centre of the study area showing fill above natural soils, facing north. (PR22-022D068)

Image 30. View of a sample test pit in the northeastern portion of the property showing shallow bedrock, facing north. (PR22-022D073)

Image 31. View of a sample test pit in the northeastern portion of the property showing impassable rock fill and disturbance, facing north. (PR22-022D077)

APPENDIX 1: Photographic Catalogue

Camera: Samsung SM-T397U

Catalogue #	Description	Dir.
PR22-022D001	view of extant building, facing south	S
PR22-022D002	view of property edge along Lake Ave. West, facing southwest	SW
PR22-022D003	view of property edge along Lake Ave. West, facing southwest	SW
PR22-022D004	view of driveway and extant building along northeast property edge, facing, east southeast	SE
PR22-022D005	view of driveway and extant building along northeast property edge, facing, east southeast	SE
PR22-022D006	view of northwest property edge, facing southwest	SW
PR22-022D007	view of northwest property edge, facing southwest	SW
PR22-022D008	view of northwest property edge, facing southwest	SW
PR22-022D009	view of lamppost and fire hydrant on northwest edge of property, facing northwest	NW
PR22-022D010	view of northwest property edge and lampposts, facing southwest	SW
PR22-022D011	view of northwest property edge and lampposts, facing southwest	SW
PR22-022D012	view of northwest property edge and lampposts, facing southwest	SW
PR22-022D013	view of tile bed and extant building, facing northeast	NE
PR22-022D014	view of tile bed and extant building, facing northeast	NE
PR22-022D015	view of tile bed slope, trampoline, and extant garage, facing southeast	SE
PR22-022D016	view of tile bed slope, trampoline, and extant garage, facing southeast	SE
PR22-022D017	view of gazebo and extant garage, facing south	S
PR22-022D018	view of gazebo and extant garage, facing south	S
PR22-022D019	view of mid-property driveway and open grass area, facing southwest	SW
PR22-022D020	view of mid-property driveway and open grass area, facing southwest	SW
PR22-022D021	view of mid-property driveway, well cap, and shed, open, facing south	S
PR22-022D022	view of mid-property driveway, well cap, and shed, open, facing south	S
PR22-022D023	view of southwest corner of property, facing west	W
PR22-022D024	view of southwest corner of property, facing west	W
PR22-022D025	view of southeast corner of property, facing south southeast	SE
PR22-022D026	view of southeast corner of property, facing south southeast	SE
PR22-022D027	view of bedrock, facing southeast	SE
PR22-022D028	view of open grass area, facing northeast	NE
PR22-022D029	view of open grass area, facing northeast	NE
PR22-022D030	view of southwest property edge, facing southeast	SE
PR22-022D031	view of southwest property edge, facing southeast	SE
PR22-022D032	view of southeast property edge, facing northeast	NE
PR22-022D033	view of southeast property edge, facing northeast	NE
PR22-022D034	view of southwest property edge, facing northwest	NW
PR22-022D035	view of southwest property edge, facing northwest	NW
PR22-022D036	view of southeast property edge near curved driveway, facing northeast	NE
PR22-022D037	view of southeast property edge near curved driveway, facing northeast	NE

Catalogue #	Description	Dir.
PR22-022D038	view of soil disturbance in the middle of the property, facing northwest	NW
PR22-022D039	view of soil disturbance in the middle of the property, facing northwest	NW
PR22-022D040	view of bedrock and brush piles beside garage, facing southeast	SE
PR22-022D041	view of curved driveway bisecting the property bedrock, facing northeast	NE
PR22-022D042	view of curved driveway bisecting the property bedrock, facing northeast	NE
PR22-022D043	view of northeast property edge behind garage, facing southwest	SW
PR22-022D044	view of northeast property edge behind garage, facing southwest	SW
PR22-022D045	view of garden path between garage and extant building, facing northwest	NW
PR22-022D046	view of garden path between garage and extant building, facing northwest	NW
PR22-022D047	view of garden path between garage and extant building, facing north	N
PR22-022D048	view of garden path between garage and extant building, facing north	N
PR22-022D049	view of garden path and tile bed between garage and extant building, facing northwest	NW
PR22-022D050	view of garden path and tile bed between garage and extant building, facing northwest	NW
PR22-022D051	view of driveway, deck, and staircase along northeast property edge, facing northwest	NW
PR22-022D052	view of northeast corner of property, facing northeast	NE
PR22-022D053	view of northeast corner of property, facing northeast	NE
PR22-022D054	view of walkway behind extant building along northeast property edge, facing south southeast	SSE
PR22-022D055	view of walkway behind extant building along northeast property edge, facing southeast	SE
PR22-022D056	view of south half of property, facing southeast	SE
PR22-022D057	view of middle curved driveway, facing east	E
PR22-022D058	view of north half of property, facing northeast	NE
PR22-022D059	view of plaque in the park across from the property, facing east	E
PR22-022D060	view of plaque marking the Willis family burials in the park across from the property, facing north	N
PR22-022D061	view of plaque marking the Willis family burials in the park across from the property, facing north	N
PR22-022D062	view of test pit 001 (trowel pointing east)	S
PR22-022D063	view of test pit 001 (trowel pointing east)	S
PR22-022D064	view of test pit 001 (trowel pointing east)	S
PR22-022D065	view of field crew testing at 5m interval	SW
PR22-022D066	view of test pit 002	E
PR22-022D067	view of test pit 002	E
PR22-022D068	view of test pit 003	N
PR22-022D069	view of test pit 003	N
PR22-022D070	view of test pit 003	N
PR22-022D071	view of field crew testing at 5m intervals	NE
PR22-022D072	view of test pit 004	N
PR22-022D073	view of test pit 004	N
PR22-022D074	view of field crew testing at 5m intervals	W
PR22-022D075	view of field crew testing at 5m intervals	W

Catalogue #	Description	Dir.
PR22-022D076	view of test pit 005	N
PR22-022D077	view of test pit 005	N
PR22-022D078	view of field crew testing at 5m intervals	N

APPENDIX 2: Glossary of Archaeological Terms

Archaeology:
The study of human past, both prehistoric and historic, by excavation of cultural material.

Archaeological Sites:
The physical remains of any building, structure, cultural feature, object, human event or activity which, because of the passage of time, are on or below the surface of the land or water.

Archaic:
A term used by archaeologists to designate a distinctive cultural period dating between 8000 and 1000 B.C. in eastern North America. The period is divided into Early (8000 to 6000 B.C.), Middle (6000 to 2500 B.C.) and Late (2500 to 1000 B.C.). It is characterized by hunting, gathering and fishing.

Artifact:
An object manufactured, modified or used by humans.

B.P.:
Before Present. Often used for archaeological dates instead of B.C. or A.D. Present is taken to be 1951, the date from which radiocarbon assays are calculated.

Backdirt:
The soil excavated from an archaeological site. It is usually removed by shovel or trowel and then screened to ensure maximum recovery of artifacts.

Chert:
A type of silica rich stone often used for making chipped stone tools. A number of chert sources are known from southern Ontario. These sources include outcrops and nodules.

Contact Period:
The period of initial contact between Native and European populations. In Ontario, this generally corresponds to the seventeenth and eighteen centuries depending on the specific area. See also Protohistoric.

Cultural Resource / Heritage Resource:
Any resource (archaeological, historical, architectural, artifactual, archival) that pertains to the development of our cultural past.

Cultural Heritage Landscapes:
Cultural heritage landscapes are groups of features made by people. The arrangement of features illustrate noteworthy relationships between people and their surrounding environment. They can provide information necessary to preserve, interpret or reinforce the understanding of important historical settings and changes to past patterns of land use. Cultural landscapes include neighbourhoods, townscapes and farmscapes.

Diagnostic:
An artifact, decorative technique or feature that is distinctive of a particular culture or time period.

Disturbed:
In an archaeological context, this term is used when the cultural deposit of a certain time period has been intruded upon by a later occupation.

Excavation:
The uncovering or extraction of cultural remains by digging.

Feature:
This term is used to designate modifications to the physical environment by human activity. Archaeological features include the remains of buildings or walls, storage pits, hearths, post moulds and artifact concentrations.

Flake:
A thin piece of stone (usually chert, chalcedony, etc.) detached during the manufacture of a chipped stone tool. A flake can also be modified into another artifact form such as a scraper.

Fluted:
A lanceolate shaped projectile point with a central channel extending from the base approximately one third of the way up the blade. One of the most diagnostic Palaeo-Indian artifacts.

Historic:
Period of written history. In Ontario, the historic period begins with European settlement.

Lithic:
Stone. Lithic artifacts would include projectile points, scrapers, ground stone adzes, gun flints, etc.

Lot:
The smallest provenience designation used to locate an artifact or feature.

Midden:
An archaeological term for a garbage dump.

Mitigation:
To reduce the severity of development impact on an archaeological or other heritage resource through preservation or excavation. The process for minimizing the adverse impacts of an undertaking on identified cultural heritage resources within an affected area of a development project.

Multicomponent:
An archaeological site which has seen repeated occupation over a period of time. Ideally, each occupation layer is separated by a sterile soil deposit that accumulated during a period when the site was not occupied. In other cases, later occupations will be directly on top of earlier ones or will even intrude upon them.

Operation:
The primary division of an archaeological site serving as part of the provenience system. The operation usually represents a culturally or geographically significant unit within the site area.

Palaeo-Indian:
The earliest human occupation of Ontario designated by archaeologists. The period dates between 9000 and 8000 B.C. and is characterized by small mobile groups of hunter-gatherers.

Prehistoric:
Before written history. In Ontario, this term is used for the period of Native occupation up until the first contact with European groups.

Profile:
The profile is the soil stratigraphy that shows up in the cross-section of an archaeological excavation. Profiles are important in understanding the relationship between different occupations of a site.

Projectile Point:
A point used to tip a projectile such as an arrow, spear or harpoon. Projectile points may be made of stone (either chipped or ground), bone, ivory, antler or metal.

Provenience:
Place of origin. In archaeology this refers to the location where an artifact or feature was found. This may be a general location or a very specific horizontal and vertical point.

Salvage:
To rescue an archaeological site or heritage resource from development impact through excavation or recording.

Stratigraphy:
The sequence of layers in an archaeological site. The stratigraphy usually includes natural soil deposits and cultural deposits.

Sub-operation:
A division of an operation unit in the provenience system.

Survey:
To examine the extent and nature of a potential site area. Survey may include surface examination of ploughed or eroded areas and sub-surface testing.

Test Pit:
A small pit, usually excavated by hand, used to determine the stratigraphy and presence of cultural material. Test pits are often used to survey a property and are usually spaced on a grid system.

Woodland:
The most recent major division in the prehistoric sequence of Ontario. The Woodland period dates from 1000 B.C. to A.D. 1550. The period is characterized by the introduction of ceramics and the beginning of agriculture in southern Ontario. The period is further divided into Early (1000 B.C. to A.D. 0), Middle (A.D. 0 to A.D. 900) and Late (A.D. 900 to A.D.1550).

Ministry of Tourism, Culture and Sport (MTCS)

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Jul 19, 2022

Stephanie Cleland (P1201)
Past Recovery Archaeological Services
1 - 99C Dufferin Perth ON K7H 3A5

RE: Entry into the Ontario Public Register of Archaeological Reports: Archaeological Assessment Report Entitled, "STAGE 1 AND 2 ARCHAEOLOGICAL ASSESSMENTS FOR A PROPOSED SEVERANCE, 254 LAKE AVENUE WEST, PART LOT 13, CONCESSION 11, GEOGRAPHIC TOWNSHIP OF BECKWITH, NOW TOWN OF CARLETON PLACE, COUNTY OF LANARK, ONTARIO", Dated Jul 8, 2022, Filed with MHSTCI Toronto Office on N/A, MHSTCI Project Information Form Number P1201-0137-2022, MHSTCI File Number 0016732

Dear Ms. Cleland:

The above-mentioned report, which has been submitted to this ministry as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18, has been entered into the Ontario Public Register of Archaeological Reports without technical review.[1]

Please note that the ministry makes no representation or warranty as to the completeness, accuracy or quality of reports in the register.

Should you require further information, please do not hesitate to send your inquiry to Archaeology@Ontario.ca

cc. Archaeology Licensing Officer
Nathan Adams,Escape Homes Consulting
Julie Stewart,Lanark County

1*In no way will the ministry be liable for any harm, damages, costs, expenses, losses, claims or actions that may result: (a) if the Report(s) or its recommendations are discovered to be inaccurate, incomplete, misleading or fraudulent; or (b) from the issuance of this letter. Further measures may need to be taken in the event that additional artifacts or archaeological sites are identified or the Report(s) is otherwise found to be inaccurate, incomplete, misleading or fraudulent.*

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Traffic Brief Technical Memorandum

To: Niki Dwyer, Director of Development Services
Date: May 11, 2022
From: Basel Ansari P.Eng.; Austin Shih P.Eng.
Reference: 478279 – 01000

Subject: **254 Lake Ave Site Plan Application – Traffic Brief Technical Memorandum**

The following Traffic Brief memo has been prepared in support of a Site Plan Application, for a proposed development located at 254 Lake Ave in the Town of Carleton Place. Town staff requested the Traffic Brief to identify potential traffic implications triggered by the proposed development in the future, and to recommend appropriate mitigation if required.

Proposed Development

Escape Homes Consulting is proposing to construct four new quadplexes and a single detached dwelling unit, with a total of 17 residential units. The development will be located at 254 Lake Ave and is expected to reach full-buildout within five-years. The Site Plan illustrating the proposed development is provided in **Appendix A**. The local site context is illustrated in **Figure 1** below.

Figure 1: Local Site Context

The proposed development is anticipated to result in minimal impacts to the study area intersections. For the purposes of this memo, only the intersection of Lake/Mississippi will be analyzed based on existing conditions and the full-buildout horizon year (assumed 2027).

Existing and Future Conditions

Existing Conditions

Existing Road Network

Lake Ave is an east-west urban collector road that is under the jurisdiction of the Town of Carleton Place. The roadway extends from its eastern cul-de-sac terminus approximately 1 km east of McNeely Ave, to its western terminus at Boundary

Rd approximately 450 m west of Mississippi Rd. The roadway within the study area consists of a two-lane cross-section and posted speed limits of 40 km/h, with on-street parking permitted on the north side only.

Mississippi Rd is a north-south urban collector road that is under the jurisdiction of the Town of Carleton Place. The roadway extends from Highway 7 in the south to Lake Ave in the north, serving as an access to residential areas. The roadway consists of a two-lane cross section and has an unposted speed limit of 50 km/h.

Existing Active Transportation Facilities

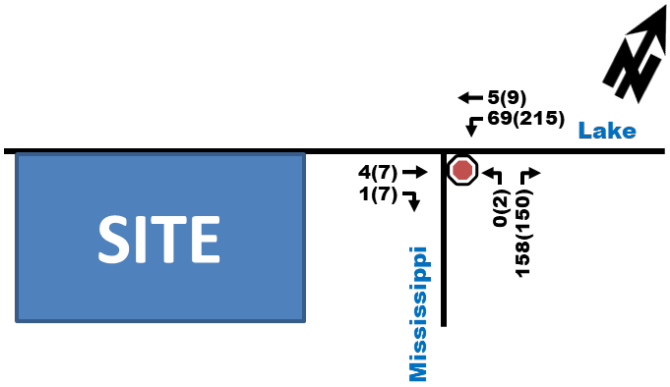
Sidewalks are currently provided on the west side of Mississippi Rd and on both sides of Lake Ave, east of Mississippi Rd. Lake Ave to the west of Mississippi Rd, sidewalks are provided on the north side of Lake Ave for approximately 75m, where they connect to the Riverside Park Trail. No pedestrian facilities are currently provided on Lake Ave along the frontage of the proposed development.

Existing Intersection Capacity Analysis

The development will be located near the southwest corner of the intersection of Lake/Mississippi, which is an unsignalized three-legged intersection. All approaches of the intersection consist of a single shared movement lane, with STOP control at the northbound movement only and free flow for the eastbound and westbound movements.

Existing 2017 traffic volumes at the intersection of Lake/Mississippi were obtained from the approved Bodnar Lands Transportation Impact Study (Stantec, May 2017). A 1% growth rate was applied to the 2017 volumes to estimate traffic volumes in 2022. It is important to note that this growth factor represents a conservative adjustment given the effects of the COVID-19 pandemic.

Figure 2: Existing Traffic Volumes (Increased to 2022)



The traffic volumes were then analyzed using industry standard intersection analysis software Synchro v11, with results summarized in **Table 1**. Detailed existing conditions Synchro reports are provided in **Appendix B**. Based on the Highway Capacity Manual (HCM) 6th edition, Level of Service (LOS) is used to evaluate traffic operations and range from LOS 'A', indicating low delays, to LOS 'F', indicating high delays. Additionally, a v/c ratio greater than 1.00 indicates heavily congested traffic operations. Typically, a LOS 'D' or better and a v/c ratio less than 1.00 are considered the acceptable threshold for intersection traffic operations.

Table 1: Existing Intersection Capacity Analysis (Synchro v11)

Intersection	Weekday AM Peak (PM Peak)		
	Intersection Delay		Max v/c Ratio
	LOS	Average Delay (s)	
Lake Ave/Mississippi Rd	A(A)	8.1(7.8)	0.16(0.16)
Note: Analysis of signalized intersections assumes a Peak Hour Factor of 0.90 and a saturation flow rate of 1900 veh/h/lane.			

As shown in **Table 1**, there are no traffic operational issues at the intersection of Lake/Mississippi in existing conditions, as the intersection operates at a LOS 'A' during both the morning and afternoon peak hours.

Queuing analysis was also completed to help understand existing congestion, particularly for the NBR and WBL movements, which are the most heavily used movements at the Lake/Mississippi intersection. The 95th percentile queue length indicate no significant traffic queues, with queues not exceeding 15m on either the NBR or WBL movements.

Planned Future Study Area Conditions

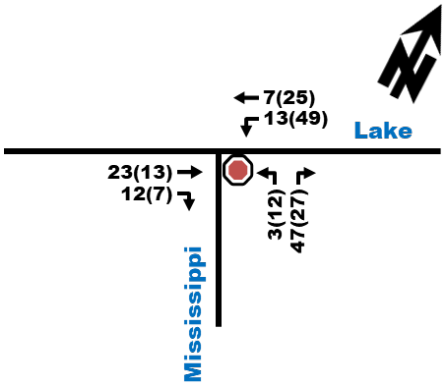
Carleton Place TMP

The Town of Carleton Place initiated its first ever Transportation Master Plan (TMP) in late 2020. The findings and recommendations of the TMP were presented to the Committee of the Whole on March 22, 2022. At this time, the draft TMP Report is in the 30-day review period. The TMP is a roadmap that will guide future planning and investments for the entire transportation network of the Town of Carleton Place to meet the needs of the current and future residents, visitors, and businesses. The TMP Report is expected to be finalized and approved later in 2022. This memo acknowledges the vision of a complete street, accommodating pedestrians and cyclists, along the entire length of Lake Ave. The proposed development is not expected to impinge this long-term plan.

Future Bodnar Lands Development

Bodnar Lands is a large-scale residential development proposed to take place in vacant lands west of Mississippi Rd, between Lake Ave and Highway 7. The development will consist of a total of 605 residential units, of which are 205 single family homes, 325 are townhomes and 72 are apartment units. Full buildout of the proposed development was estimated to be 2029. For the purpose of this traffic brief, it will be conservatively assumed that Bodnar Lands will already be at full buildout in conjunction with the full buildout of the development at 254 Lake Ave (i.e. 2027). Bodnar Lands anticipated site-generated traffic volumes at full buildout are illustrated in **Figure 3**.

Figure 3: Bodnar Lands Development Site-Generated Traffic



Trip Generation and Background Growth

Trip Generation

The proposed development will consist of a total of 17 new residential units within a single detached unit and four quadplex buildings. Peak hour vehicle trip generation rates were derived from the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th edition), assuming "Single-Family Detached Housing" and "Multi-family Housing (Low-Rise)" land uses for the single residential unit and the quadplexes, respectively. The trip rates are presented in **Table 2**.

Table 2: Proposed Development Trip Rates

Land Use	Data Source	Vehicle Trip Rates	
		AM Peak (Vehicle Trips/h)	PM Peak (Vehicle Trips/h)
Single-Family Detached Housing	ITE 210	T = 0.74(du); T = 0.71(du) + 4.80;	T = 0.99(du); Ln(T) = 0.96Ln(du) + 0.20;
Multifamily Housing (Low-Rise)	ITE 220	T = 0.46(du); Ln(T) = 0.95Ln(du) - 0.51;	T = 0.56(du); Ln(T) = 0.89Ln(du) - 0.02;
Notes: *T = Average Vehicle Trip Ends* *du = Dwelling unit*			

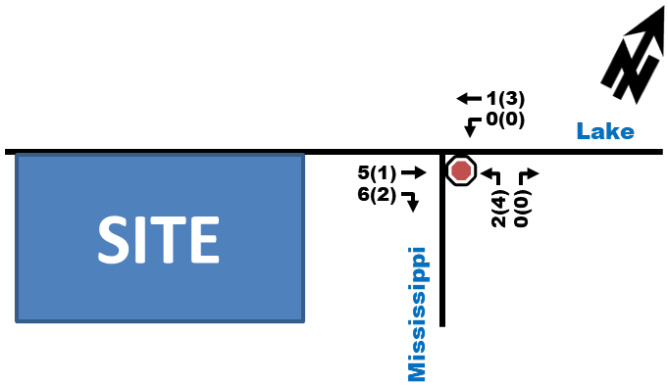
Using the trip rates provided in **Table 2**, the number of vehicle trips anticipated to be generated by the proposed development are summarized in **Table 3**.

Table 3: Proposed Development's Vehicle Trips

Land Use	Units	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In	Out	Total	In	Out	Total
Single-Family Detached Housing	1	1	5	6	1	0	1
Multifamily Housing (Low-Rise)	16	2	6	8	6	3	9
Total		3	11	14	7	3	10

As shown in **Table 3**, the proposed development is forecasted to generate a combined total of up to 14 vehicle trips during weekday peak hours. The site-generated vehicle trips of the proposed development were then assigned to the road network as shown in **Figure 4**, where a traffic distribution of approximately 50% was assumed to/from Highway 7 via Mississippi Rd and 50% to/from Carleton Place via Lake Ave.

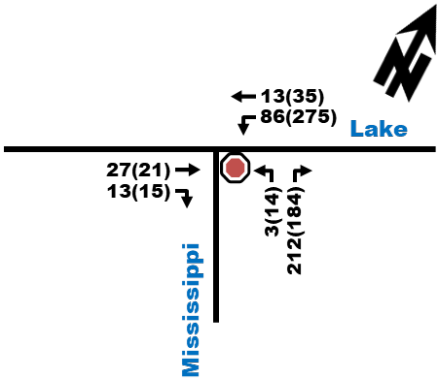
Figure 4: Proposed Development Site-Generated Traffic



Background Growth

The addition of the Bodnar Lands site-generated traffic volumes is expected to account for the majority of the expected future traffic growth at the intersection of Lake/Mississippi. To be conservative, the previously noted 1% growth rate was applied to all intersection movements up to the 2027 horizon year. The total future background 2027 traffic volume are illustrated in **Figure 5**, which includes both the Bodnar Lands development volumes in **Figure 3** and the assumed background growth rate.

Figure 5: Total Future Background 2027 Traffic Volumes



Projected Future Conditions

On-Site Design

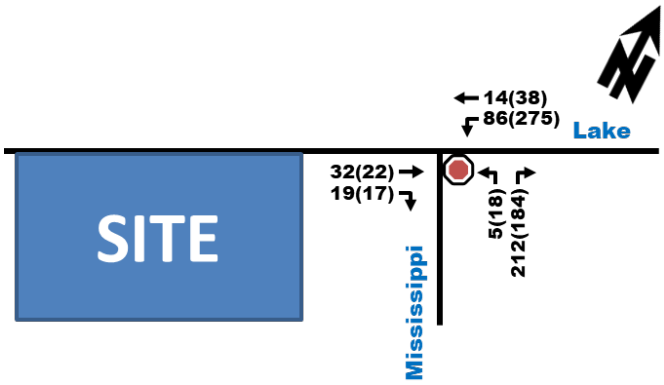
As shown on the Site Plan (**Appendix A**), three new driveways are proposed to provide vehicle access to the new residential units. The single detached dwelling unit will have a 3.0m wide driveway. For the four quadplexes, two 6.0m wide two-way driveways will provide access to the buildings, where each driveway will serve two quadplex buildings. For each quadplex building, 5 vehicle parking spaces will be provided in covered parking areas at the back of the buildings, with 1 visitor parking space outside each of the covered parking areas.

It is expected that garbage and fire services for the quadplexes will be limited to Lake Ave. Fire trucks typically require a minimum 6.0m road width, which is provided. However, the rear laneways are not expected to be connected, which will require trucks to reverse back onto Lake Ave if rear access is in fact needed.

Traffic Impacts

The total projected future traffic volumes at the intersection of Lake/Mississippi are illustrated in **Figure 6**, where the anticipated site-generated traffic volumes (**Figure 4**) are added to the total future background 2027 traffic volumes (**Figure 5**).

Figure 6: Projected Future Traffic Volumes at Full Buildout (2027)



Synchro analysis was then conducted using the future projected traffic volumes in **Figure 6**, with the analysis results summarized in **Table 4**. Detailed Synchro analysis reports have been provided in **Appendix C**.

Table 4: Projected Intersection Capacity Analysis (Synchro v11)

Intersection	Weekday AM Peak (PM Peak)		
	Intersection Delay		Max v/c Ratio
	LOS	Average Delay (s)	
Lake Ave/Mississippi Rd	A(A)	7.5(7.9)	0.24(0.26)
Note: Analysis of signalized intersections assumes a PHF of 0.90 and a saturation flow rate of 1900 veh/h/lane.			

The analysis results indicate similar intersection delays as existing conditions, with slightly higher max v/c ratios. The intersection of Lake/Mississippi is anticipated to continue operating at LOS 'A' during both the morning and afternoon peak hours. Therefore, the proposed development will have negligible impact on the long-term road network operations.

Additionally, queuing analysis indicated that a 95th percentile queue length did not exceed 25m (or roughly 4 to 5 passenger cars) on either the NBR or WBL movements during peak hours – the most heavily used movements at the Lake/Mississippi intersection. These results are slightly higher compared to existing conditions, but are well within acceptable levels.

Conclusions

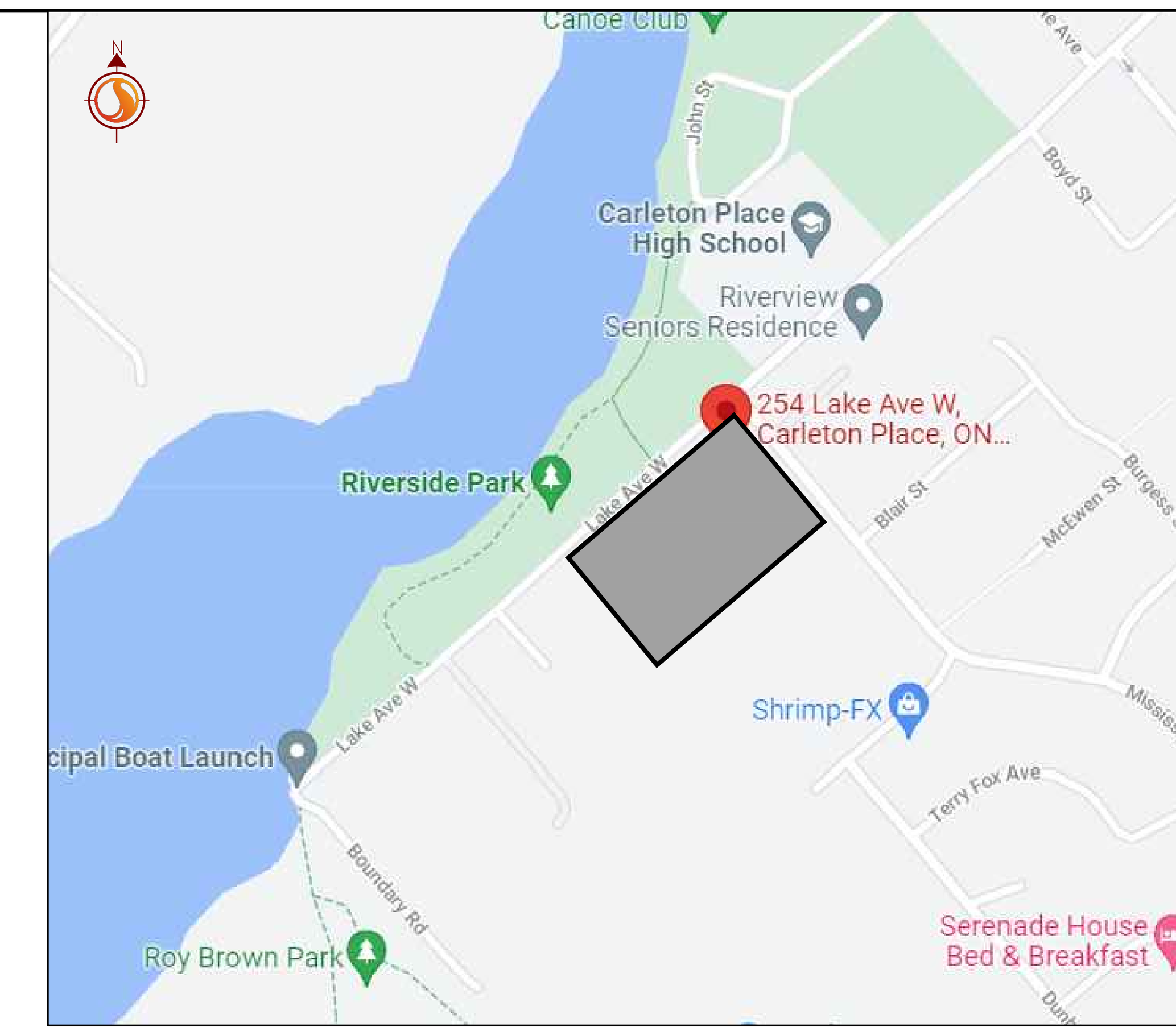
Based on the information provided in this traffic brief, the proposed development can be accommodated by the adjacent road network in the future. A summary of the general findings and conclusions is presented below:

- A new residential development is proposed to be located at 254 Lake Ave in the Town of Carleton Place. The development will consist of 1 single detached dwelling unit and 16 quadplex units, for a total of 17 units.
- A total of 24 vehicle parking spaces are proposed for the quadplex buildings, where 5 covered parking spaces and 1 visitor parking space will be provided for each of the quadplex buildings.
- Full buildout of the proposed development is assumed to be within five-years (i.e. 2027). The development is anticipated to generate up to 14 new vehicle trips during the weekday peak hours.
- Synchro analysis of existing traffic operations at Lake/Mississippi indicate the intersection operates at LOS 'A' during peak hours. Queuing analysis indicate the vehicle queues do not generally exceed 15m on the NBR and WBL movements during the peak hours. Both results suggest there are no vehicular capacity issues.
- Local conditions are expected to change with construction of the Bodnar Lands residential development. The Bodnar Lands development was assumed to be fully constructed and occupied by 2027.
- A 1% background growth rate was conservatively applied to all movements at the intersection of Lake/Mississippi to account for any potential additional traffic growth.
- A 3.0m wide driveway will be provided for the single detached unit, while two 6.0m wide two-way driveways will provide access to the four quadplex buildings, which meet minimum width requirements for fire trucks. However, it is expected that garbage and fire services for the quadplexes will be limited to Lake Ave.
- Projected future Synchro analysis of the intersection of Lake/Mississippi indicate the intersection will continue to operate at LOS 'A' in the future. Queuing analysis also indicate future vehicle queues are not expected to exceed 25m on the NBR and WBL movements during peak hours, which is well within acceptable limits. These results suggest the intersection will continue to operate well in the future with anticipated traffic growth.

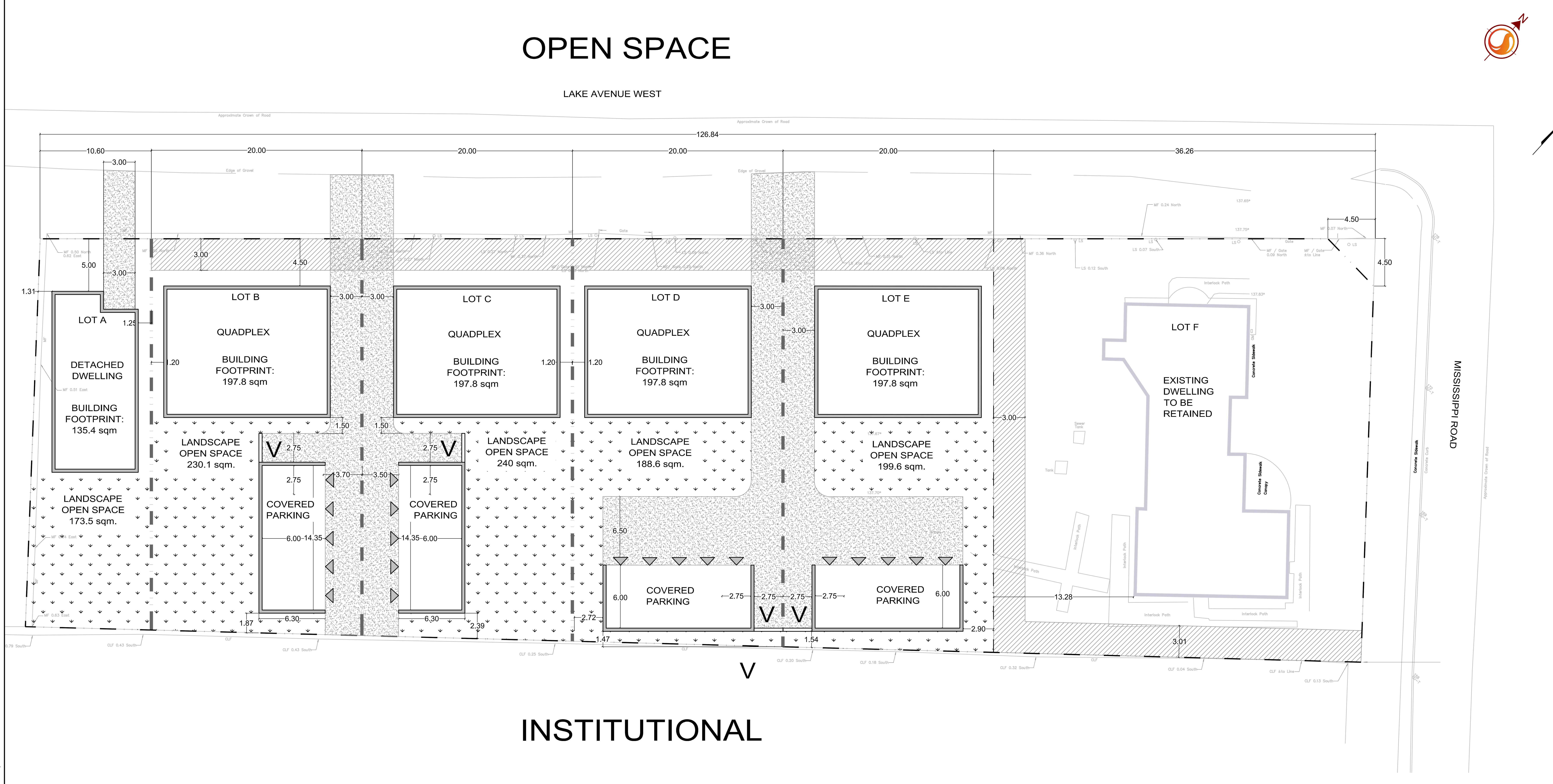
Appendix A – Site Plan

Zoning Table

	Single Detached Dwelling		Quadplex				
	Required	Provided - Lot A	Required	Provided - Lot B	Provided - Lot C	Provided - Lot D	Provided - Lot E
Lot Area (min.)	Nil	416.51	Nil	749.32	759.475	770.19	781.1
Lot coverage (max)	80%	32.50%	60%	26.4	26.04	25.68	25.32
Lot frontage (min)	10.6m	10.6m	15m	20m	20m	20m	20m
Front yard buildin within area	4.5-7.5m	5m	4.5-7.5	4.5m	4.5m	4.5m	4.5m
Interior side yard (min)	1.2m	1.2m	1.2m	1.2m, 1.5m			
Rear yard depth (min)	7.5m	14.9m	9m	20.2m	21.1m	21.3m	21.7m
Useable landscaped open space in the rear yard (min)	50m2	173.5m2	30m2 per dwelling unit, total 120sqm	219.5m2	226.5m2	163.5m2	172.8m2
Building height (max)	11m	-	14m	-	-	-	-
Dwelling unit area (min)	92.9m2	135.4m2	N/A	N/A	N/A	N/A	N/A
No encroachment area from front lot line	2.5m	2.5m	2.5m	2.5m			
Parking Spaces	2 per dwelling unit, one of which may be provided within the garage	2	1.25 per dwelling unit	5	5	5	5
Driveway	Max. 45% of lot frontage	28.30%	N/A	N/A	N/A	N/A	N/A
Main garage foundation	6m from the front lot line	6.7m	N/A	N/A	N/A	N/A	N/A
Visitor parking	-	-	Min. 1 vistor parking space	1	1	1	1



KEY PLAN
N.T.S.



Stantec

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Legend

- LANDSCAPE OPEN SPACE
- ASPHALT
- COMMON ELEMENTS CONDOMINIUM
- PROPERTY LINE
- LIMIT OF PARCEL
- V VISITOR PARKING

Revision				
1 ISSUED FOR REVIEW	CA	SS		21.12.13
Revision	By	Appd.		YY.MM.DD
File Name: 160410347	CA	SS	SS	21.12.20
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project
ESCAPE HOMES

254 LAKE AVENUE WEST

CARLETON PLACE, ON

Title
PRELIMINARY CONCEPT PLAN

Project No. 160410347
Scale 1:200 (0 2 6 10m)

Drawing No. L100
Sheet 1of 1
Revision 1

Appendix B – Existing Conditions Synchro Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	4	1	69	5	0	158
Future Volume (Veh/h)	4	1	69	5	0	158
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	1	77	6	0	176
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			5		164	4
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			5		164	4
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		100	84
cM capacity (veh/h)			1616		787	1079

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	5	83	176
Volume Left	0	77	0
Volume Right	1	0	176
cSH	1700	1616	1079
Volume to Capacity	0.00	0.05	0.16
Queue Length 95th (m)	0.0	1.1	4.4
Control Delay (s)	0.0	6.8	9.0
Lane LOS		A	A
Approach Delay (s)	0.0	6.8	9.0
Approach LOS			A

Intersection Summary			
Average Delay	8.1		
Intersection Capacity Utilization	27.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	7	7	215	9	2	150
Future Volume (Veh/h)	7	7	215	9	2	150
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	8	8	239	10	2	167
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			16		500	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			16		500	12
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			85		100	84
cM capacity (veh/h)			1602		451	1069

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	16	249	169
Volume Left	0	239	2
Volume Right	8	0	167
cSH	1700	1602	1052
Volume to Capacity	0.01	0.15	0.16
Queue Length 95th (m)	0.0	4.0	4.3
Control Delay (s)	0.0	7.4	9.1
Lane LOS		A	A
Approach Delay (s)	0.0	7.4	9.1
Approach LOS			A

Intersection Summary			
Average Delay	7.8		
Intersection Capacity Utilization	35.1%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix C – Future Conditions Synchro Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	32	19	86	14	5	212
Future Volume (Veh/h)	32	19	86	14	5	212
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	36	21	96	16	6	236
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			57		254	46
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			57		254	46
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		99	77
cM capacity (veh/h)			1547		689	1023

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	57	112	242
Volume Left	0	96	6
Volume Right	21	0	236
cSH	1700	1547	1011
Volume to Capacity	0.03	0.06	0.24
Queue Length 95th (m)	0.0	1.5	7.1
Control Delay (s)	0.0	6.5	9.7
Lane LOS		A	A
Approach Delay (s)	0.0	6.5	9.7
Approach LOS			A

Intersection Summary			
Average Delay		7.5	
Intersection Capacity Utilization		32.2%	ICU Level of Service
Analysis Period (min)		15	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	22	17	275	38	18	184
Future Volume (Veh/h)	22	17	275	38	18	184
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	24	19	306	42	20	204
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			43		688	34
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			43		688	34
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			80		94	80
cM capacity (veh/h)			1566		332	1040

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	43	348	224
Volume Left	0	306	20
Volume Right	19	0	204
cSH	1700	1566	873
Volume to Capacity	0.03	0.20	0.26
Queue Length 95th (m)	0.0	5.5	7.8
Control Delay (s)	0.0	7.1	10.5
Lane LOS		A	B
Approach Delay (s)	0.0	7.1	10.5
Approach LOS			B

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		

SERVICING & STORMWATER MANAGEMENT REPORT
254 LAKE AVENUE WEST

Project No.: CCO-22-1448

City File No.:

Escape Homes Consulting
115 Blackberry Way
Dunrobin, ON
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Prepared by:

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Carp, ON K0A 1L0

February 8th, 2023

McINTOSH PERRY

TABLE OF CONTENTS

LIST OF TABLES

APPENDICES

1.0 PROJECT DESCRIPTION

1.1 Purpose

McIntosh Perry (MP) has been retained by Escape Homes to prepare this Servicing and Stormwater Management Report in support of the Site Plan Control process for the proposed residential development, located at 254 Lake Avenue West in the Town of Carleton Place.

The main purpose of this report is to present a servicing and stormwater management design for the development in accordance with the recommendations and guidelines provided by the City of Ottawa (City), the Mississippi Valley Conservation Authority (MVCA), and the Ministry of the Environment, Conservation and Parks (MECP). This report will address the water, sanitary and storm sewer servicing for the development, ensuring that existing and available services will adequately service the proposed development.

This report should be read in conjunction with the following drawings:

- CCO-22-1448, C101 – Lot Grading and Drainage Plan
- CCO-22-1448, C102 – Servicing Plan
- CCO-22-1448, C103 – Sediment and Erosion Control Plan
- CCO-22-1448, PRE – Pre-Development Drainage Area Plan (***Appendix 'E'***)
- CCO-22-1448, POST – Post-Development Drainage Area Plan (***Appendix 'F'***)

1.2 Site Description

The property is located at 254 Lake Avenue West within the Town of Carleton Place. It is described as Part of Lots 12 and 13, Concession 11, Geographic Township of Beckwith, and in the County of Lanark. The land in question covers approximately ***0.49 ha*** and is located south-west of the Mississippi Road and Lake Avenue West intersection. Development is proposed over the full ***0.49 ha*** of the site. See Site Location Plan in ***Appendix A*** and topographic survey in ***Appendix B*** for more details.

1.3 Proposed Development and Statistics

The proposed development consists of four ***197.8 m^2*** residential quadplex units, two ***135.4 m^2*** two-storey detached residences, and a ***282.5 m^2*** two storey semi-detached residence. New parking and drive aisles will be provided with access from Lake Avenue West. The existing site access from Lake Avenue West will remain for the existing building. Refer to ***Site Plan*** prepared by Stantec Consulting Ltd and included in ***Appendix B*** for further details.

1.4 Existing Conditions and Infrastructures

The existing site is currently developed as a two-storey detached dwelling and includes an asphalt driveway. The existing building is proposed to be retained within a subdivided plot of land, with the remaining ***0.35 ha*** being subdivided into 5 parcels of land.

Sewer and watermain mapping collected from the Town of Carleton Place indicate that the following services exist across the property frontages within the adjacent municipal rights-of-way(s):

- Water Servicing
  - Based on Town of Carleton Place as-builts prepared by Stantec Consulting (Project No. 160401129), a 300 mm diameter watermain was installed along Lake Avenue West to support the Bodnar Lands subdivision.
  - In addition, two municipal fire hydrants have been installed along Lake Avenue West to support the Bodnar Lands subdivision.

- Wastewater Servicing
  - Based on coordination with Town staff, a 200 mm diameter sanitary stub is proposed to be installed within Lyndhurst Street and will be available to service the development. Refer to Town drawing LYNDHURST -2022 drawing PW2-2022-8 for further details.

- Stormwater Servicing
  - A catchbasin system exists within Lake Avenue West. Based on coordination with Town staff, this storm sewer system often surcharges and overflows into the park.
  - The site currently directs stormwater overland towards the shallow roadside ditch along the south side of Lake Avenue.

2.0 BACKROUND STUDIES

2.1 Background Reports / Reference Information

As-built drawings of existing services, provided by the Town of Carleton Place, within the vicinity of the proposed site were reviewed in order to identify infrastructure available to service the proposed development.

A topographic survey (17446-21) of the site was completed by Annis, O'Sullivan, Vollebekk Ltd and dated June 30th, 2021.

The Site Plan (L100) was prepared by Stantec Consulting Ltd and dated January 27th, 2023 (***Site Plan***).

2.2 Applicable Guidelines and Standards

City of Ottawa:

- Ottawa Sewer Design Guidelines, City of Ottawa, SDG002, October 2012. (***Ottawa Sewer Guidelines***)
  - Technical Bulletin ISTB-2014-01 City of Ottawa, February 2014***. (ISTB-2014-01)***
  - Technical Bulletin PIEDTB-2016-01 City of Ottawa, September 2016. ***(PIEDTB-2016-01)***
  - Technical Bulletin ISTB-2018-01 City of Ottawa, January 2018***. (ISTB-2018-01)***
  - Technical Bulletin ISTB-2018-03 City of Ottawa, March 2018. ***(ISTB-2018-03)***
  - Technical Bulletin ISTB-2019-01 City of Ottawa, January 2019. ***(ISTB-2019-01)***
  - Technical Bulletin ISTB-2019-02 City of Ottawa, February 2019. ***(ISTB-2019-02)***
- Ottawa Design Guidelines – Water Distribution City of Ottawa, July 2010. (***Ottawa Water Guidelines***)
  - Technical Bulletin ISD-2010-2 City of Ottawa, December 15, 2010. ***(ISD-2010-2)***
  - Technical Bulletin ISDTB-2014-02 City of Ottawa, May 2014. **(ISDTB-2014-02)**
  - Technical Bulletin ISTB-2018-02 City of Ottawa, March 2018. ***(ISTB-2018-02)***

Ministry of Environment, Conservation and Parks:

- Stormwater Planning and Design Manual, Ministry of the Environment, March 2003. ***(MECP Stormwater Design Manual)***
- Design Guidelines for Sewage Works, Ministry of the Environment, 2008. (***MECP Sewer Design Guidelines***)

3.0 WATERMAIN

3.1 Existing Watermain

There is an existing 300 mm diameter watermain within Lake Avenue West available to service the proposed development. As noted in Section 1.4, there are two fire hydrants fronting the site and installed to service the Bodnar Lands subdivision.

3.2 Proposed Watermain

A new 38 mm diameter water service is proposed to be serviced by a connection to the existing 300 mm watermain within Lake Avenue West for each of the proposed quadplex buildings. A 19 mm diameter water service is proposed to service the detached home from the Lake Avenue West watermain. Each water service contains a water valve located at the property line. The water services have been designed to have a minimum of 2.4 m of cover. Refer to drawing ***C102*** for a detailed servicing layout.

The Fire Underwriters Survey 1999 (FUS) method was utilized to estimate the required fire flow for the site. Fire flow requirements were calculated per City of Ottawa Technical Bulletin ***ISTB-2018-02***. The following parameters were assumed.

- Type of construction – Wood Frame Construction
- Occupancy Type – Limited Combustibility
- Sprinkler Protection – No Sprinkler System

Table 1, below, summarizes the proposed fire flow demands based on the FUS method.

Table 1: Fire Flow Demands

Building	Fire Flow Demand (L/min)	Fire Flow Demand (L/s)
Detached Home (Lot 1 - western)	6,000	100
Quadplex (Lot 2)	8,000	133.33
Quadplex (Lot 3)	8,000	133.33
Quadplex (Lot 4)	8,000	133.33
Quadplex (Lot 5)	8,000	133.33
Semi-Detached Home (Lot 6/7)	7,000	116.66
Detached Home (Lot 8 – eastern)	5,000	83.33

The water demands for the proposed buildings have been calculated to adhere to the *Ottawa Design Guidelines – Water Distribution* manual and can be found in ***Appendix 'C'***. The criteria and corresponding results have been summarized in ***Table 2***, below:

Table 2: Water Demands

Design Parameter	Value
Site Area	0.49 ha
Detached Homes	3.4 persons/unit
Average Apartment (Quadplex)	1.8 persons/unit
Residential Peaking Factor (Day)	9.5 x avg. day
Residential Peaking Factor (Hour)	14.3 x avg. day
Average Day Demand	0.14 L/s
Maximum Daily Demand	1.32 L/s
Peak Hourly Demand	1.99 L/s

To confirm the adequacy of fire flow to protect the proposed development, public fire hydrants within 150 m of the site were accounted for per City of Ottawa Technical Bulletin ***ISTB 2018-03*** *Appendix I*. Results can be seen in ***Table 3***, below.

Table 3: Fire Protection Confirmation

Buildings	Fire Flow Demand (L/min.)	Fire Hydrant(s) within 75m (5,700 L/min)	Fire Hydrant(s) within 150m (3,800 L/min)	Combined Fire Flow (L/min.)
Lot 1-3	8,000 L/min (max)	1 public	2 public	12,900
Lot 4-5	8,000 L/min (max)	2 public	-	11,400
Lot 6-8	7,000 L/min (max)	1 public	1 public	9,500

Based on ***Table 3***, above, there is enough hydrant coverage to support the calculated fire flow demand of 8,000 L/min. Therefore, additional private hydrants are not anticipated to be required.

The Town provided the static HGL and pressures for the municipal watermain within Lake Avenue West. The results have been summarized in ***Table 4,*** below. Based on the modelling results, the municipal watermain has sufficient pressures during normal operating scenarios to support development. Refer to ***Appendix C*** for pressure results provided by Stantec.

Table 4: Watermain Pressures

Scenario	Static HGL at Nearest Junction (m)	Pressure (psi)	Pressure (kPa)
Average Day Demand	184.5	66	437
Peak Hour Demand	182.4	63	458

4.0 SANITARY DESIGN

4.1 Existing Sanitary Sewers

There is an existing 200 mm diameter sanitary sewer located within Lyndhurst Street available to service the development. As noted in Section 1.4, a 200 mm diameter sanitary sewer replacement and extension is proposed. A 200 mm diameter sanitary stub will be available in the boulevard north of Lyndhurst Street to accommodate sanitary servicing from the proposed development.

4.2 Proposed Sanitary Sewer

135 mm diameter sanitary services are proposed to provide servicing to each building. The sanitary services will connect to a new 200 mm diameter gravity sanitary sewer located within the site along the north property line and east side of the existing building lot. The proposed sanitary sewer will lead to a E/One W-series pump station (or equivalent product) at the southeast corner of the site. From the pump station, a sanitary forcemain will then discharge to the 200 mm diameter sanitary stub located in the boulevard north of Lyndhurst Street (forcemain and pump station design by others). Refer to drawing C102 for a detailed sanitary sewer layout.

Table 5, below, summarizes the wastewater design criteria identified by the ***Ottawa Sewer Guidelines***.

Table 5: Sanitary Design Criteria

Design Parameter	Value
Average Apartment	1.8 persons/unit
Single Family Home	3.4 persons/unit
Average Daily Demand	280 L/day/person
Residential Peaking Factor	3.68
Extraneous Flow Allowances	0.33 L/s/ha

Table 6, below, summarizes the estimated wastewater flow from the proposed development. Refer to ***Appendix D*** for detailed calculations.

Table 6: Summary of Estimated Sanitary Flow

Design Parameter	Total Flow (L/S)
Total Estimated Average Dry Weather Flow	0.16
Total Estimated Peak Dry Weather Flow	0.53
Total Estimated Peak Wet Weather Flow	0.67

The full flowing capacity of a 200 mm sanitary service at a 0.32% slope is estimated to be ***19.36 L/s***. Per ***Table 4***, above, a peak wet weather flow of ***0.67 L/s*** will be conveyed within the 200 mm diameter service, therefore the proposed system is sufficient sized for the development. See *Sanitary Sewer Design Sheet* in ***Appendix D*** of this report for more details.

5.0 STORM SEWER DESIGN

5.1 Existing Storm Sewers

There is an existing catchbasin system along Lake Avenue. Based on coordination with Town staff, this storm sewer system often surcharges and overflows into the park. In addition, a shallow roadside ditch exists north of the site and south of Lake Avenue. Site drainage currently infiltrates and flows overland towards the roadside ditch at the north-west corner of the site.

5.2 Proposed Storm Sewers

The roadside ditch along the south side of Lake Avenue is proposed to be deepened to allow for development, starting approximately 40.8 m west of the site and ending at the Mississippi Road intersection. Deepening the roadside ditch allows for a perimeter drainage system, which will direct site drainage towards the roadside ditch per existing conditions. The perimeter system will contain a layer of riverstone at the surface and a subdrain beneath surrounded in a clear stone trench. The subdrain system will promote. In a large storm event, water will back up through the downstream catchbasin, directing stormwater towards the roadside ditch.

In order to control stormwater to pre-development conditions, two depressed stormwater areas are required. Stormwater will be controlled by the culvert outlets sending stormwater towards the Lake Ave roadside ditch.

Buildings are proposed to be slab on grade. Foundation drainage will need a sump pumped towards landscaped areas of the respective lots and will ultimately discharge to the roadside ditch system. Sump pump system to be designed by others.

Runoff collected on the rooves of the proposed quadplexes will be stored and controlled internally using one roof drain per rooftop. The roof drain(s) will be used to limit the flow from the roof to the specified allowable release rate. For calculation purposes a Watts Accutrol roof drain was used estimate a reasonable roof flow. Other products maybe specified at detailed building design so long as release rates and storage volumes are respected.

See CCO-22-1448 - *POST* and *Storm Sewer Design Sheet* in ***Appendix 'F'*** of this report for more details. The Stormwater Management design for the subject property will be outlined in Section 6.0.

6.0 PROPOSED STORMWATER MANAGEMENT

6.1 Design Criteria and Methodology

Stormwater management for the proposed site will be maintained through positive drainage away from the proposed buildings and into the re-defined roadside ditch along the south side of Lake Avenue West. On-site swales will capture runoff from the roof (Lot 1, 6-8), parking lot, and landscaped areas. Depressed stormwater areas are proposed to restrict stormwater and provide the necessary storage to meet pre-development flow rates. The site has been designed such that the site will overtop the top of slope of the depressed stormwater area an emergency situation prior to backing up towards the building. Stormwater collected on the rooftops of the quadplexes will be controlled before discharging to the roadside ditch. The quantitative and qualitative properties of the storm runoff for both the pre & post development flows are further detailed below.

In summary, the following design criteria have been employed in developing the stormwater management design for the site as directed by the Town:

Quantity Control

- Post-development flow 5/100-year flow is be restricted to match the 5 and 100-year pre-development flow.

6.2 Runoff Calculations

Runoff calculations presented in this report are derived using the Rational Method, given as:

$$Q = 2.78CIA \text{ (L/s)}$$

Where C = Runoff coefficient
I = Rainfall intensity in mm/hr (City of Ottawa IDF curves)
A = Drainage area in hectares

It is recognized that the Rational Method tends to overestimate runoff rates. As a result, the conservative calculation of runoff ensures that any SWM facility sized using this method is expected to function as intended.

The following coefficients were used to develop an average C for each area:

Roofs/Concrete/Asphalt	0.90
Gravel	0.60
Undeveloped and Grass	0.20

As per the *City of Ottawa - Sewer Design Guidelines*, the 5-year balanced 'C' value must be increased by 25% for a 100-year storm event to a maximum of 1.0.

6.3 Pre-Development Drainage

The existing site drainage limits are demonstrated on the Pre-Development Drainage Area Plan. A summary of the Pre-Development Runoff Calculations can be found below.

Table 7: Pre-Development Runoff Summary

Drainage Area	Area (ha)	Runoff Coefficient (5-Year)	Runoff Coefficient (100-Year)	5-year Peak Flow (L/s)	100-year Peak Flow (L/s)
A1	0.49	0.34	0.40	48.24	97.31
Total	**0.49**			**48.24**	**97.31**

See CCO-22-1448 - *PRE* in ***Appendix E*** and ***Appendix G*** for calculations.

6.4 Post-Development Drainage

To meet the stormwater objectives the development will contain rooftop and surface storage controls.

The proposed site drainage limits are demonstrated on the Post-Development Drainage Area Plan. See CCO-22-1448 - *POST* in ***Appendix F*** of this report for more details. A summary of the Post-Development Runoff Calculations can be found below. See ***Appendix G*** for detailed calculations.

Table 8: Post-Development Runoff Summary

Drainage Area	Area (ha)	Runoff Coefficient (5-Year)	Runoff Coefficient (100-Year)	Unrestricted 5-year Peak Flow (L/s)	Unrestricted 100-year Peak Flow (L/s)
B1	0.02	0.90	1.00	5.16	9.82
B2	0.02	0.90	1.00	5.16	9.82
B3	0.02	0.90	1.00	5.16	9.82
B4	0.02	0.90	1.00	5.16	9.82
B5	0.15	0.41	0.47	17.14	34.06
B6	0.08	0.55	0.62	12.54	24.43
B7	0.04	0.53	0.61	6.80	13.26
B8	0.08	0.48	0.55	11.46	22.49
B9	0.06	0.39	0.45	6.55	13.05
Total	**0.49**			**75.11**	**146.56**

6.5 Quantity Control

After discussing the stormwater management criteria for the site with Town staff, the total post-development runoff for this site has been restricted to match the 5 and 100 year pre-development flow rates. These values result in the following allowable release rates for the development, not including the existing building lot.

Table 9: Allowable Release Rate Summary

Drainage Area	Area (ha)	Runoff Coefficient 5-Year	Runoff Coefficient 100-Year	Required Restricted Flow *5-Year* (L/s)	Required Restricted Flow 100-Year (L/s)
A1	0.49	0.34	0.40	48.24	97.31

Reducing site flows will be achieved using a flow restriction on rooftops and within the depressed stormwater area, creating the need for onsite storage.

Table 10: Post-Development Restricted Runoff Summary

Drainage Area	Post Development Restricted Flow (L/s)		Post Development Storage Requirement (m^3)	
	5-Year	100-Year	5-Year	100-Year
B1	0.42	0.72	4.3	8.5
B2	0.42	0.72	4.3	8.5
B3	0.42	0.72	4.3	8.5
B4	0.42	0.72	4.3	8.5
B5	17.14	34.06	-	-
B6	4.67	7.53	4.7	10.7
B7	2.95	5.11	2.3	4.9
B8	11.46	22.49	-	-
B9	6.55	13.05	-	-
Total	**44.45**	**85.12**	**24.4**	**49.5**

Runoff for area B1-B4 will be stored on the rooves of the proposed quadplex buildings and restricted using one Watts Accutrol roof drain (or equivalent product) per building to a maximum release rate of ***0.72 L/s*** and will provide up to ***8.5 m^3*** of storage.

Runoff from area B5 is proposed to be unrestricted and will be compensated for by areas with flow attenuation.

Runoff for area B6 will be controlled by a depressed storage area with 100 mm outlet culvert. The storage area proposed to contain up to ***10.7 m³*** of surface storage up to a maximum release rate of ***7.53 L/s***. Stormwater will be collected by the perimeter swale system and conveyed to the redefined roadside ditch.

Runoff for area B7 will be controlled by a depressed storage area with 100 mm outlet culvert. The storage area proposed to contain up to ***4.9 m³*** of surface storage up to a maximum release rate of ***5.11 L/s***. Stormwater will be collected by the perimeter swale system and conveyed to the redefined roadside ditch.

Buildings are proposed to be slab on grade. Foundation drainage will need a sump pumped towards the roadside ditch system. Sump pump system to be designed by others.

7.0 EROSION AND SEDIMENT CONTROL

7.1 Temporary Measures

Before construction begins, temporary silt fence, straw bale or rock flow check dams will be installed at all natural runoff outlets from the property. It is crucial that these controls be maintained throughout construction and inspection of sediment and erosion control will be facilitated by the Contractor or Contract Administration staff throughout the construction period.

Silt fences will be installed where shown on the final engineering plans, specifically along the downstream property limits. The Contractor, at their discretion or at the instruction of the City, Conservation Authority or the Contract Administrator shall increase the quantity of sediment and erosion controls on-site to ensure that the site is operating as intended and no additional sediment finds its way off site. The rock flow, straw bale & silt fence check dams and barriers shall be inspected weekly and after rainfall events. Care shall be taken to properly remove sediment from the fences and check dams as required. Fibre roll barriers are to be installed at all existing curb inlet catchbasins and filter fabric is to be placed under the grates of all existing catchbasins and manholes along the frontage of the site and any new structures immediately upon installation. The measures for the existing/proposed structures is to be removed only after all areas have been paved. Care shall be taken at the removal stage to ensure that any silt that has accumulated is properly handled and disposed of. Removal of silt fences without prior removal of the sediments shall not be permitted.

Although not anticipated, work through winter months shall be closely monitored for erosion along sloped areas. Should erosion be noted, the Contractor shall be alerted and shall take all necessary steps to rectify the situation. Should the Contractor's efforts fail at remediating the eroded areas, the Contractor shall contact the City and/or Conservation Authority to review the site conditions and determine the appropriate course of action. As the ground begins to thaw, the Contractor shall place silt fencing at all required locations as soon as ground conditions warrant. Please see the *Site Grading, Drainage and Sediment & Erosion Control Plan* for additional details regarding the temporary measures to be installed and their appropriate OPSD references.

7.2 Permanent Measures

It is expected that the Contractor will promptly ensure that all disturbed areas receive topsoil and seed/sod and that grass be established as soon as possible. Any areas of excess fill shall be removed or levelled as soon

as possible and must be located a sufficient distance from any watercourse to ensure that no sediment is washed out into the watercourse. As the vegetation growth within the site provides a key component to the control of sediment for the site, it must be properly maintained once established. Once the construction is complete, it will be up to the landowner to maintain the vegetation and ensure that the vegetation is not overgrown or impeded by foreign objects.

8.0 SUMMARY

- A new detached home and four quadplexes are proposed to be constructed at 254 Lake Avenue West.
- A new water service is proposed to service each building from the existing 300 mm diameter watermain within Lake Avenue West.
- A new 200 mm internal sanitary sewer and pump station is proposed to service the buildings. Each new building will be serviced by a 135 mm sanitary service.
- The Lake Avenue West roadside ditch is proposed to be deepened to support a stormwater management system at 254 Lake Avenue West. Stormwater management controls are proposed to be provided via surface storage and rooftop storage.

9.0 RECOMMENDATION

Based on the information presented in this report, we recommend that Town of Carleton Place approve this Servicing and Stormwater Management Report in support of the proposed development at 254 Lake Avenue West.

This report is respectfully being submitted for approval.

Regards,

McIntosh Perry Consulting Engineers Ltd.

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E:a.macleod@mcintoshperry.com

10.0 STATEMENT OF LIMITATIONS

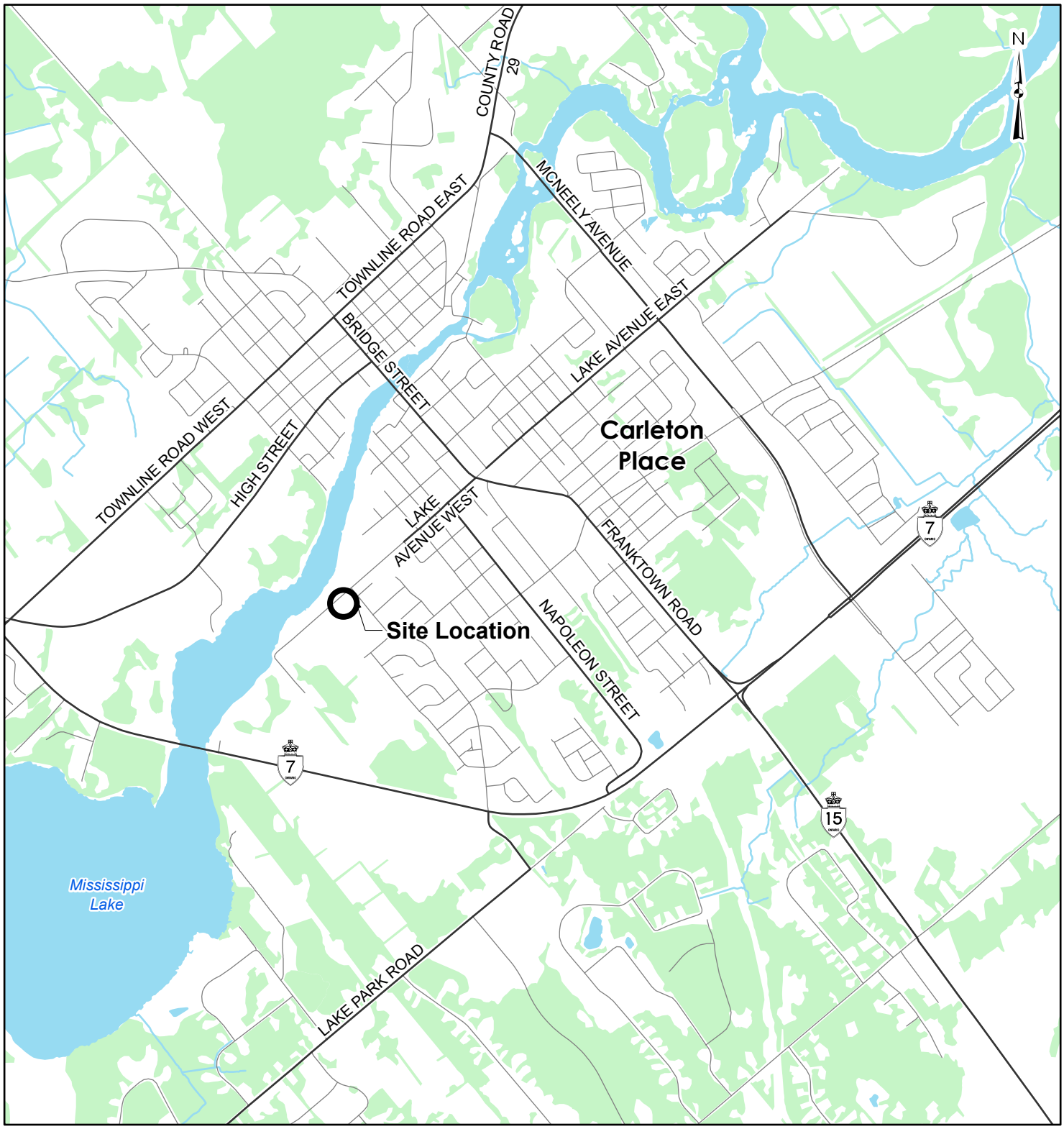
This report was produced for the exclusive use of Escape Homes. The purpose of the report is to assess the existing stormwater management system and provide recommendations and designs for the post-construction scenario that are in compliance with the guidelines and standards from the Ministry of the Environment, Conservation and Parks, City of Ottawa and local approval agencies. McIntosh Perry reviewed the site information and background documents listed in Section 2.0 of this report. While the previous data was reviewed by McIntosh Perry and site visits were performed, no field verification/measures of any information were conducted.

Any use of this review by a third party, or any reliance on decisions made based on it, without a reliance report is the responsibility of such third parties. McIntosh Perry accepts no responsibility for damages, if any, suffered by any third party as a result of decisions or actions made based on this review.

The findings, conclusions and/or recommendations of this report are only valid as of the date of this report. No assurance is made regarding any changes in conditions subsequent to this date. If additional information is discovered or becomes available at a future date, McIntosh Perry should be requested to re-evaluate the conclusions presented in this report, and provide amendments, if required.

APPENDIX A
KEY PLAN

McINTOSH PERRY



LEGEND

- Site Location
- Local Road
- Major Road
- Watercourse
- Waterbody
- Wooded Area

500 250 0 500

Scale 1:25,000 Metres

REFERENCE

GIS data provided by the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry, 2022.

CLIENT: ESCAPE HOMES

PROJECT: 254 LAKE AVE, CARLETON PLACE

TITLE: SITE LOCATION PLAN

McINTOSH PERRY
115 Walgreen Road, RR3, Carp, ON K0A1L0
Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

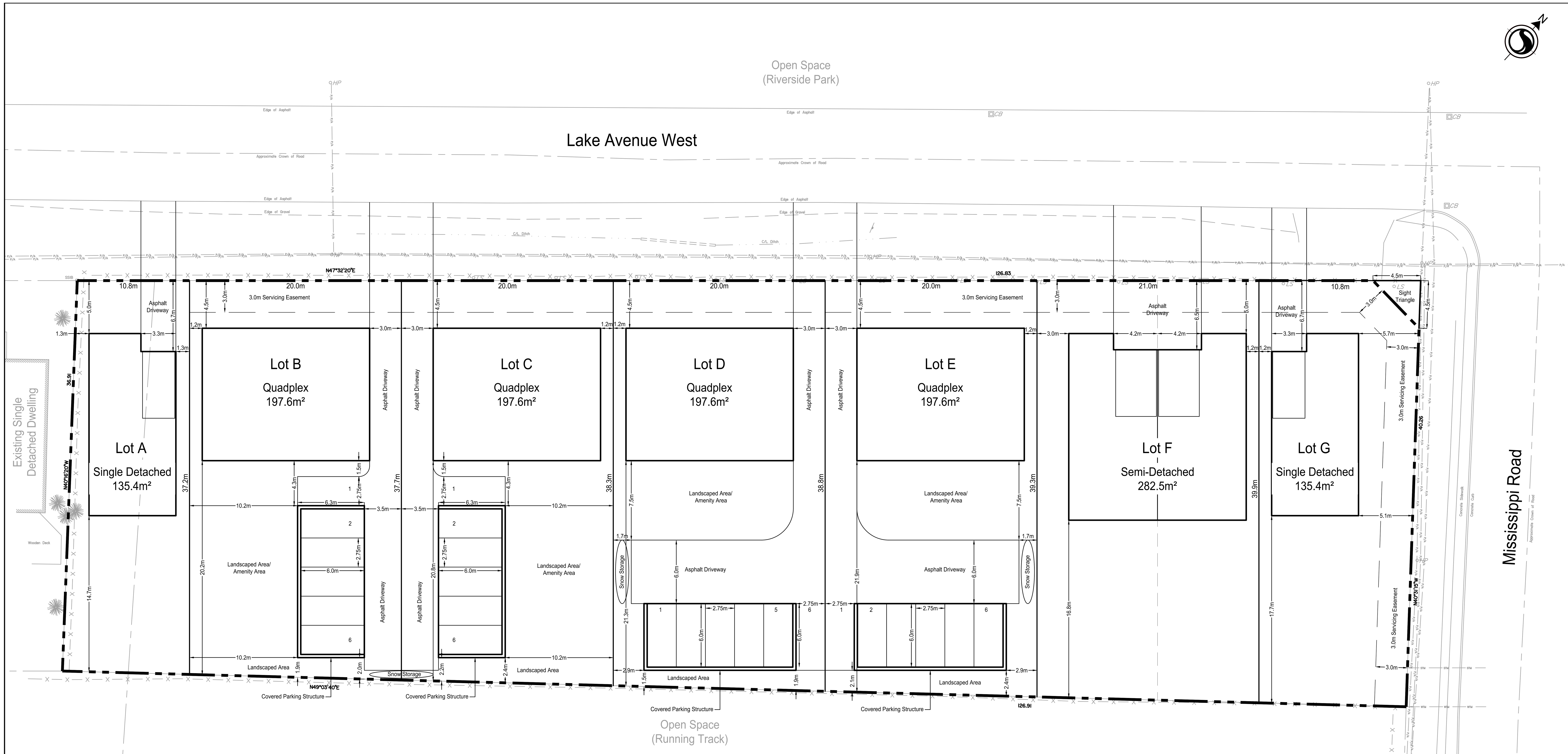
PROJECT NO:	CCO-22-1448
Date	Mar., 24, 2022
GIS	SK
Checked By	AG

FIGURE: 1

C:\Users\s.klassen\McIntosh Perry\GIS - Documents\Projects\2022\CCO\CCO-22-1448 Escape Homes\aprx\Key Maps\Land Development\CCO-22-1448 KeyMap.aprx

APPENDIX B
BACKGROUND DOCUMENTS

McINTOSH PERRY



Stantec Consulting Ltd.
100-300 Hagey Boulevard
Waterloo ON N2L 0A4
Tel: (519) 579-4410
www.stantec.com

Key Map NTS.

Legal Description

Part of Lots 12 and 13,
Concession 11,
Town of Carleton Place,
County of Lanark

Details of Development

SITE DETAILS	REQUIRED	LOT A - PROVIDED	LOT G - PROVIDED
ZONING	RESIDENTIAL DISTRICT - SINGLE DETACHED DWELLING		
MINIMUM LOT AREA	NIL	418.6m²	574.2m²
MAXIMUM LOT COVERAGE	60.0%	32.3%	23.5%
MINIMUM LOT FRONTAGE	10.6m	10.8m	15.1m
FRONT YARD BUILD WITHIN AREA	MINIMUM = 4.5m MAXIMUM = 7.5m	5.0m	5.0m
EXTERIOR SIDE YARD BUILD WITHIN AREA	MINIMUM = 4.5m MAXIMUM = 7.5m	N/A	5.1m
MINIMUM INTERIOR SIDE YARD	1.2m	1.3m & 1.3m	1.2m
MINIMUM REAR YARD DEPTH	7.5m	14.7m	17.7m
MINIMUM USABLE LANDSCAPED OPEN SPACE IN THE REAR YARD	50.0m²	173.9m²	253.8m²
MAXIMUM BUILDING HEIGHT	11.0m	<11.0m	<11.0m
MINIMUM DWELLING UNIT AREA	92.9m²	135.4m²	135.4m²
NO ENCROACHMENT AREA FROM FRONT OR EXTERIOR SIDE LOT LINE	2.5m	2.5m	2.5m
PARKING SPACE	2 SPACES	2 SPACES	2 SPACES
MAXIMUM GARAGE WIDTH	50.0% OF LOT FRONTAGE	27.8%	21.8%
MINIMUM MAIN GARAGE FOUNDATION SETBACK	6.0m	6.7m	6.7m

Parking Calculation

SINGLE DETACHED DWELLING:
2 SPACES PER UNIT
1 UNIT x 2 SPACES = 2 SPACES

Details of Development

SITE DETAILS	REQUIRED	LOT B - PROVIDED	LOT C - PROVIDED	LOT D - PROVIDED	LOT E - PROVIDED
ZONING	RESIDENTIAL DISTRICT - QUADPLEX				
MINIMUM LOT AREA	NIL	749.2m²	759.8m²	770.5m²	781.1m²
MAXIMUM LOT COVERAGE	60.0%	26.4%	26.0%	25.6%	25.3%
MINIMUM LOT FRONTAGE	15.0m	20.0m	20.0m	20.0m	20.0m
FRONT YARD BUILD WITHIN AREA	MINIMUM = 4.5m MAXIMUM = 7.5m	4.5m	4.5m	4.5m	4.5m
EXTERIOR SIDE YARD BUILD WITHIN AREA	MINIMUM = 4.5m MAXIMUM = 7.5m	N/A	N/A	N/A	N/A
MINIMUM INTERIOR SIDE YARD	1.2m	1.2m & 3.0m	1.2m & 3.0m	1.2m & 3.0m	1.2m & 3.0m
MINIMUM REAR YARD DEPTH	9.0m	20.2m	20.8m	21.3m	21.9m
MINIMUM USABLE LANDSCAPED OPEN SPACE IN THE REAR YARD	30.0m²	107.9m²	107.9m²	125.5m²	125.5m²
MAXIMUM BUILDING HEIGHT	14.0m	<14.0m	<14.0m	<14.0m	<14.0m
NO ENCROACHMENT AREA FROM FRONT OR EXTERIOR SIDE LOT LINE	2.5m	2.5m	2.5m	2.5m	2.5m
PARKING SPACE	6 SPACES	6 SPACES	6 SPACES	6 SPACES	6 SPACES
VISITOR PARKING SPACE	1 SPACES	1 SPACES	1 SPACES	1 SPACES	1 SPACES

Parking Calculation

QUADPLEX:
1.25 SPACES PER UNIT
4 UNITS x 1.25 SPACES = 5 SPACES

VISITOR PARKING:
0.25 SPACE PER UNIT
4 UNITS x 0.25 SPACES = 1 SPACE

Details of Development

SITE DETAILS	REQUIRED	LOT F - PROVIDED
ZONING	RESIDENTIAL DISTRICT - SEMI-DETACHED	
MINIMUM LOT AREA	NIL	829.7m²
MAXIMUM LOT COVERAGE	60.0%	34.0%
MINIMUM LOT FRONTAGE	15.0m (7.5m/UNIT)	21.0m
FRONT YARD BUILD WITHIN AREA	MINIMUM = 4.5m MAXIMUM = 7.5m	5.0m
EXTERIOR SIDE YARD BUILD WITHIN AREA	MINIMUM = 4.5m MAXIMUM = 7.5m	N/A
MINIMUM INTERIOR SIDE YARD	1.2m	3.0m & 1.2m
MINIMUM REAR YARD DEPTH	7.5m	16.8m
MINIMUM USABLE LANDSCAPED OPEN SPACE IN THE REAR YARD	40.0m²	355.6m²
MAXIMUM BUILDING HEIGHT	11.0m	<11.0m
MINIMUM DWELLING UNIT AREA	92.9m²	282.5m²
NO ENCROACHMENT AREA FROM FRONT OR EXTERIOR SIDE LOT LINE	2.5m	2.5m
PARKING SPACE	2 SPACES	2 SPACES
MAXIMUM GARAGE WIDTH		40.0%
MINIMUM MAIN GARAGE FOUNDATION SETBACK		6.5m

Parking Calculation

SINGLE DETACHED DWELLING:
2 SPACES PER UNIT
1 UNIT x 2 SPACES = 2 SPACES

	Revision	By	Appd	YYYY.MM.DD
2.	REVISED AS PER CLIENT COMMENTS	JJ	EB	2023.01.27
1.	REVISED AS PER CLIENT COMMENTS	JJ	EB	2022.09.19
	ISSUED FOR CLIENT REVIEW	JJ	EB	2022.08.30

File Name: 160410347_R-SP	JJ	JJ	EB	2022.08.29
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Permit-Seal

Client/Project

ESCAPE HOMES

254 LAKE AVENUE WEST

CARLETON PLACE, ON

Title

SITE PLAN

Project No. 160410347

Scale 1:200 0 2 6 10m

Revision 2

Sheet 1 of 1

Drawing No. SP-1

ORIGINAL SHEET - ARCH D

Notes & Legend

	Denotes	
—□—	"	Survey Monument Planted
—■—	"	Survey Monument Found
SIB	"	Standard Iron Bar
SSIB	"	Short Standard Iron Bar
IB	"	Iron Bar
CC	"	Cut Cross
CP	"	Concrete Pin
(WIT)	"	Witness
Meas.	"	Measured
(AOG)	"	Annis, O'Sullivan, Vollebekk Ltd.
(P1)	"	Plan 27R-10703
(P2)	"	Plan 26R-591
(P3)	"	Plan 27R-11133
(P4)	"	(1326) Plan November 24, 1983
(P5)	"	Plan 26R-1227
○ UP	"	Utility Pole
—— OHW ——	"	Overhead Wires
Inv.	"	Invert
T/G	"	Top of Grate
T/P	"	Top of Pipe
□CB	"	Catch Basin
GM	"	Gas Meter
△ S	"	Sign
MF	"	Metal Fence
CLF	"	Chain Link Fence
SRW	"	Stone Retaining Wall
WRW	"	Wooden Retaining Wall
CRW	"	Concrete Retaining Wall
AC	"	Air Conditioner
+ 65.00	"	Location of Elevations
+ 65.00*	"	Top of Wall / Curb Elevations
C/L	"	Centreline
CSP	"	Corrugated Steel Pipe
CPP	"	Corrugated Plastic Pipe
○ LS	"	Light Standard
	"	Deciduous Tree
	"	Coniferous Tree
Elev.	"	Elevation
Ø	"	Diameter
○ MH-S	"	Maintenance Hole (Sanitary)

SURVEYOR'S REAL PROPERTY REPORT

PART 1 Plan of PART OF LOTS 12 and 13 CONCESSION 11 Geographic Township of Beckwith TOWN OF CARLETON PLACE COUNTY OF LANARK

Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 150

6 4.5 3.0 1.5 0 3 6 Metres

Metric

DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

Surveyor's Certificate

I CERTIFY THAT :

1. This survey and plan are correct and in accordance with the Surveys Act, the Surveyors Act and the Land Titles Act and the regulations made under them.
2. The survey was completed on the 8th day of June, 2021.

JUNE 30, 2021
Date

A.J. Broxham
Andrew J. Broxham
Ontario Land Surveyor

PART 2
THIS PLAN MUST BE READ IN CONJUNCTION WITH SURVEY REPORT DATED: JUNE 30, 2021

ANNIS, O'SULLIVAN, VOLLEBEKK LTD. grants to Escape Homes Consulting ("The Client"), their solicitors, mortgagees, and other related parties, permission to use original, signed, sealed copies of the Surveyor's Real Property Report in transactions involving The Client.

Bearings are grid, derived from the southerly limit of Lake Avenue West shown to be N47°32'20"E on Plan 27R-10703 and are referenced to MTM Zone 9 (76°30' West Longitude) NAD-83 (CSRS)(2010).

For bearing comparisons, a rotation of 1°04'15" counter-clockwise was applied to bearings on plan P3, 0°23'20" counter-clockwise was applied to bearings on plans P4, P5.

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
V-13590
THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR In accordance with Regulation 1026, Section 29 (3).

ELEVATION NOTES

1. Elevations shown are geodetic and are referred to the top of fire hydrant spindle in front of 218 Lyndhurst Street shown to have an elevation of 141.94 metres (CGVD28 geodetic datum) on plan by Callon Dietz dated December 17, 2020 .
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

UTILITY NOTES

1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
2. Only visible surface utilities were located.
3. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079
Email: Nepean@aovltd.com
Ontario Land Surveyors

Job No. 17446-21 EHC PtLt 12 C 11 BE T F2 | ig

APPENDIX C
WATERMAIN CALCULATIONS

McINTOSH PERRY

McINTOSH PERRY

CO-22-1448 - 254 Lake Avenue West - Water Demands

Project:	254 Lake Avenue West
Project No.:	CO-22-1448
Designed By:	FV
Checked By:	AG
Date:	February 8, 2023
Site Area:	0.49 gross ha

Residential	**NUMBER OF UNITS**		**UNIT RATE**	
Single Family	**4**	**homes**	3.4	persons/unit
Average Apartment	**16**	**units**	1.8	persons/unit
Total Population	**43**	**persons**		

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	280	L/c/d
Industrial - Light	35,000	L/gross ha/d
Industrial - Heavy	55,000	L/gross ha/d
Shopping Centres	2,500	L/(1000m² /d
Hospital	900	L/(bed/day)
Schools	70	L/(Student/d)
Trailer Park with no Hook-Ups	340	L/(space/d)
Trailer Park with Hook-Ups	800	L/(space/d)
Campgrounds	225	L/(campsite/d)
Mobile Home Parks	1,000	L/(Space/d)
Motels	150	L/(bed-space/d)
Hotels	225	L/(bed-space/d)
Tourist Commercial	28,000	L/gross ha/d
Other Commercial	28,000	L/gross ha/d

AVERAGE DAILY DEMAND	**Residential**	**0.14**	**L/s**
	Commerical/Industrial/ Institutional	**0.00**	**L/s**

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info@mcintoshperry.com | www.mcintoshperry.com

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MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	9.5	x avg. day	L/c/d
Industrial	1.5	x avg. day	L/gross ha/d
Commercial	1.5	x avg. day	L/gross ha/d
Institutional	1.5	x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	**Residential**	**1.32**	**L/s**
	Commerical/Industrial/ Institutional	**0.00**	**L/s**

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	14.3	x avg. day	L/c/d
Industrial	1.8	x max. day	L/gross ha/d
Commercial	1.8	x max. day	L/gross ha/d
Institutional	1.8	x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	**Residential**	**1.99**	**L/s**
	Commerical/Industrial/ Institutional	**0.00**	**L/s**

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	0.14	L/s
MAXIMUM DAILY DEMAND	1.32	L/s
MAXIMUM HOUR DEMAND	1.99	L/s

McINTOSH PERRY

CO-22-1448 - 254 Lake Avenue West - Detached Lot 1 - Fire Underwriters Survey

Project:	254 Lake Avenue West - Detached Lot 1
Project No.:	CO-22-1448
Designed By:	FV
Checked By:	AG
Date:	February 8, 2023

From the Fire Underwriters Survey (1999)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
Updated per City of Ottawa Technical Bulletin ISTB-2018-02

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where:

F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Wood Frame

C 1.5 **A** **270.8** m^2

Caluclated Fire Flow	**5,430.5 L/min**
	5,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From note 2, Page 18 of the Fire Underwriter Survey:

Limited Combustible -15%

Fire Flow	**4,250.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered 0%

Reduction	**0.0 L/min**

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor	
Exposure 1	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 2	0 to 3	Wood frame	12.5	2	25.0	22%
Exposure 3	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 4	3.1 to 10	Wood frame	14.49	2	29.0	17%
					% Increase*	**39%**

Increase*	**1,657.5 L/min**

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	**5,907.5 L/min**
Fire Flow Required**	**6,000.0 L/min**

*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%
**In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

McINTOSH PERRY

CO-22-1448 - 254 Lake Avenue West - Quadplex Lot 2 - Fire Underwriters Survey

Project:	254 Lake Avenue West - Quadplex Lot 2
Project No.:	CO-22-1448
Designed By:	FV
Checked By:	AG
Date:	February 8, 2023

From the Fire Underwriters Survey (1999)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
Updated per City of Ottawa Technical Bulletin ISTB-2018-02

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where:

F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Wood Frame

C 1.5 **A** **395.6** m^2

Caluclated Fire Flow	**6,563.6 L/min**
	7,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From note 2, Page 18 of the Fire Underwriter Survey:

Limited Combustible -15%

Fire Flow	**5,950.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered 0%

Reduction	**0.0 L/min**

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor	
Exposure 1	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 2	3.1 to 10	Wood frame	12.5	2	25.0	17%
Exposure 3	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 4	0 to 3	Wood frame	15.5	2	31.0	23%
					% Increase*	**40%**

Increase*	**2,380.0 L/min**

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	**8,330.0 L/min**
Fire Flow Required**	**8,000.0 L/min**

*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%
**In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

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info@mcintoshperry.com | www.mcintoshperry.com

McINTOSH PERRY

CO-22-1448 - 254 Lake Avenue West - Quadplex Lot 3 - Fire Underwriters Survey

Project:	254 Lake Avenue West - Quadplex Lot 3
Project No.:	CO-22-1448
Designed By:	FV
Checked By:	AG
Date:	February 8, 2023

From the Fire Underwriters Survey (1999)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
Updated per City of Ottawa Technical Bulletin ISTB-2018-02

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where:

F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Wood Frame

C 1.5 **A** **395.6** m^2

Caluclated Fire Flow	**6,563.6 L/min**
	7,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From note 2, Page 18 of the Fire Underwriter Survey:

Limited Combustible -15%

Fire Flow	**5,950.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered 0%

Reduction	**0.0 L/min**

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor	
Exposure 1	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 2	0 to 3	Wood frame	12.5	2	25.0	22%
Exposure 3	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 4	3.1 to 10	Wood frame	12.5	2	25.0	17%
					% Increase*	**39%**

Increase*	**2,320.5 L/min**

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	**8,270.5 L/min**
Fire Flow Required**	**8,000.0 L/min**

*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%
**In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

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McINTOSH PERRY

CO-22-1448 - 254 Lake Avenue West - Quadplex Lot 4 - Fire Underwriters Survey

Project:	254 Lake Avenue West - Quadplex Lot 4
Project No.:	CO-22-1448
Designed By:	FV
Checked By:	AG
Date:	February 8, 2023

From the Fire Underwriters Survey (1999)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
Updated per City of Ottawa Technical Bulletin ISTB-2018-02

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where:

F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Wood Frame

C 1.5 **A** **395.6** m^2

Caluclated Fire Flow	**6,563.6 L/min**
	7,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From note 2, Page 18 of the Fire Underwriter Survey:

Limited Combustible -15%

Fire Flow	**5,950.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered 0%

Reduction	**0.0 L/min**

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor	
Exposure 1	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 2	3.1 to 10	Wood frame	12.5	2	25.0	17%
Exposure 3	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 4	0 to 3	Wood frame	12.5	2	25.0	22%
					% Increase*	**39%**

Increase*	**2,320.5 L/min**

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	**8,270.5 L/min**
Fire Flow Required**	**8,000.0 L/min**

*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%
**In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

McINTOSH PERRY

CO-22-1448 - 254 Lake Avenue West - Quadplex Lot 5 - Fire Underwriters Survey

Project:	254 Lake Avenue West - Quadplex Lot 5
Project No.:	CO-22-1448
Designed By:	FV
Checked By:	AG
Date:	February 8, 2023

From the Fire Underwriters Survey (1999)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
Updated per City of Ottawa Technical Bulletin ISTB-2018-02

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where:

F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Wood Frame

C 1.5 **A** **395.6** m^2

Caluclated Fire Flow	**6,563.6 L/min**
	7,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From note 2, Page 18 of the Fire Underwriter Survey:

Limited Combustible -15%

Fire Flow	**5,950.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered 0%

Reduction	**0.0 L/min**

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor	
Exposure 1	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 2	3.1 to 10	Wood frame	17.5	2	35.0	18%
Exposure 3	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 4	3.1 to 10	Wood frame	12.5	2	25.0	17%
					% Increase*	**35%**

Increase*	**2,082.5 L/min**

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	**8,032.5 L/min**
Fire Flow Required**	**8,000.0 L/min**

*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%
**In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

115 Walgreen Road, R.R.3. Carp, ON K0A 1L0 | T. 613-836-2184 | F. 613-836-3742
info@mcintoshperry.com | www.mcintoshperry.com

McINTOSH PERRY

CO-22-1448 - 254 Lake Avenue West - Semi-Detached Lot 6/7 - Fire Underwriters Survey

Project:	254 Lake Avenue West - Semi-Detached Lot 6/7
Project No.:	CO-22-1448
Designed By:	FV
Checked By:	AG
Date:	February 8, 2023

From the Fire Underwriters Survey (1999)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
Updated per City of Ottawa Technical Bulletin ISTB-2018-02

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where:

F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Wood Frame

C 1.5 **A** **282.5** m^2

Caluclated Fire Flow	**5,546.6 L/min**
	6,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From note 2, Page 18 of the Fire Underwriter Survey:

Limited Combustible -15%

Fire Flow	**5,100.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered 0%

Reduction	**0.0 L/min**

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor	
Exposure 1	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 2	0 to 3	Wood frame	15.5	2	31.0	23%
Exposure 3	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 4	0 to 3	Wood frame	15.5	2	31.0	23%
					% Increase*	**46%**

Increase*	**2,346.0 L/min**

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	**7,446.0 L/min**
Fire Flow Required**	**7,000.0 L/min**

*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%
**In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

McINTOSH PERRY

CO-22-1448 - 254 Lake Avenue West - Single Detached Lot 8 - Fire Underwriters Survey

Project:	254 Lake Avenue West - Single Detached Lot 8
Project No.:	CO-22-1448
Designed By:	FV
Checked By:	AG
Date:	February 8, 2023

From the Fire Underwriters Survey (1999)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
Updated per City of Ottawa Technical Bulletin ISTB-2018-02

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where:

F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Wood Frame

C 1.5 **A** **270.8** m^2

Caluclated Fire Flow	**5,430.5 L/min**
	5,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From note 2, Page 18 of the Fire Underwriter Survey:

Limited Combustible -15%

Fire Flow	**4,250.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered 0%

Reduction	**0.0 L/min**

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor	
Exposure 1	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 2	>45	Wood frame	N/A	N/A	-	0%
Exposure 3	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 4	0 to 3	Wood frame	17.5	2	35.0	23%
					% Increase*	**23%**

Increase*	**977.5 L/min**

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	**5,227.5 L/min**
Fire Flow Required**	**5,000.0 L/min**

*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%
**In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

Alison Gosling

From: Guy Bourgon <gbourgon@carletonplace.ca>
Sent: November 18, 2021 4:02 PM
To: Alison Gosling
Cc: Niki Dwyer
Subject: FW: 22-1488 - 254 Lake Avenue

Follow Up Flag: Follow up
Flag Status: Completed

Hi Alison,

Please see below requested information relating to 254 Lake Avenue West.

Regards,

Guy

From: Razafimaharo, Christene <Christene.Razafimaharo@stantec.com>
Sent: November 18, 2021 3:59 PM
To: Guy Bourgon <gbourgon@carletonplace.ca>
Cc: Alemany, Kevin <kevin.alemany@stantec.com>; Niki Dwyer <ndwyer@carletonplace.ca>
Subject: RE: 22-1488 - 254 Lake Avenue

Good afternoon Guy,

We have reviewed the model & pressures as requested.

The pressures at 254 Lake Ave W range from 63 psi to 66 psi. The static hydraulic grade lines (HGLs) were obtained from the Town's model for peak hour demand (PHD) conditions (minimum HGL) and average day demand (ADD) conditions (maximum HGL). The ground elevation at the site is approximately 137.8 m, based on the Town's LIDAR digital elevation model.

Property:	254 Lake Ave				
Demand Condition	**Static HGL @ nearest Model Junction (m)**	**Ground Elevation at site (m)**	**Pressure (m)**	**Pressure (kPa)**	**Pressure (psi)**
PHD (Min HGL)	182.4	137.8	44.6	437	63
ADD (Max HGL)	184.5		46.7	458	66
HGL extracted from model on:	11/18/2021				
Ground obtained from Town LIDAR on:	11/18/2021				

Please let us know if you have any questions,

Best regards,

Christène

Christène Razafimaharo M.Sc., EIT
Water Resources Engineering Intern

Mobile: 343 996-7086
Christene.Razafimaharo@stantec.com

From: Alison Gosling <a.gosling@mcintoshperry.com>
Sent: November 17, 2021 1:48 PM
To: Niki Dwyer <ndwyer@carletonplace.ca>
Subject: 22-1488 - 254 Lake Avenue

Good afternoon,

Touching base with you regarding the development at 254 Lake Avenue.

One of our inquiries is in relation to the water pressure near the site. Can this be provided via a model or provided by a report?

Please let me know if you have any questions.

Thank you,

Alison Gosling, P.Eng.
Project Engineer, Land Development
115 Walgreen Road, Carp, ON, K0A 1L0
T. 613.714.4629
a.gosling@mcintoshperry.com | www.mcintoshperry.com

McINTOSH PERRY

Turning Possibilities Into Reality

APPENDIX D
SANITARY CALCULATIONS

McINTOSH PERRY

McINTOSH PERRY

CO-22-1448 - 254 Lake Avenue West - Sanitary Demands

Project:	254 Lake Avenue West
Project No.:	CO-22-1448
Designed By:	FV
Checked By:	AG
Date:	Feb-23

Site Area	**0.49**	**Gross ha**	
Single Family	**4**	**3.40**	Persons per unit
Average Apartment	**16**	**1.80**	Persons per unit
Total Population	**43**	**Persons**	

DESIGN PARAMETERS

Institutional/Commercial Peaking Facto	1.5	
Residential Peaking Factor	3.66	** Using Harmon Formula =* 1+(14/(4+P^0.5))*0.8
		where P = population in thousands, Harmon's Correction Factor = 0.8
Mannings coefficient (n)	0.013	
Demand (per capita)	280	L/day
Infiltration allowance	0.33	L/s/Ha

EXTRANEOUS FLOW ALLOWANCES

Infiltration / Inflow	Flow (L/s)
Dry	0.02
Wet	0.14
Total	**0.16**

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	280	L/c/d	43	0.14
Industrial - Light**	35,000	L/gross ha/d		0
Industrial - Heavy**	55,000	L/gross ha/d		0
Commercial / Amenity	2,800	L/(1000m² /d)		0.00
Hospital	900	L/(bed/day)		0
Schools	70	L/(Student/d)		0
Trailer Parks no Hook-Ups	340	L/(space/d)		0
Trailer Park with Hook-Ups	800	L/(space/d)		0
Campgrounds	225	L/(campsite/d)		0
Mobile Home Parks	1,000	L/(Space/d)		0
Motels	150	L/(bed-space/d)		0
Hotels	225	L/(bed-space/d)		0
Office	75	L/7.0m^2/d		0
Tourist Commercial	28,000	L/gross ha/d		0
Other Commercial	28,000	L/gross ha/d		0

AVERAGE RESIDENTIAL FLOW	0.14	L/s
PEAK RESIDENTIAL FLOW	0.51	L/s
AVERAGE ICI FLOW	0.00	L/s
PEAK INSTITUTIONAL/COMMERCIAL FLOW	0.00	L/s
PEAK INDUSTRIAL FLOW	0.00	L/s
TOTAL PEAK ICI FLOW	0.00	L/s

TOTAL SANITARY DEMAND

TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	0.16	L/s
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	0.53	L/s
TOTAL ESTIMATED PEAK WET WEATHER FLOW	0.67	L/s

SANITARY SEWER DESIGN SHEET

PROJECT: CCO-22-1448
LOCATION: 254 Lake Avenue West
CLIENT: Escape Homes

McINTOSH PERRY

LOCATION				RESIDENTIAL									ICI AREAS							INFILTRATION ALLOWANCE			FLOW	SEWER DATA						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
STREET	AREA ID	FROM MH	TO MH	UNIT TYPES				AREA (ha)	POPULATION		PEAK FACTOR	PEAK FLOW (L/s)	AREA (ha)						PEAK FLOW (L/s)	AREA (ha)		FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	DIA (mm)	SLOPE (%)	VELOCITY (full) (m/s)	AVAILABLE CAPACITY	
				SF	SD	TH	APT		IND	CUM			INSTITUTIONAL		COMMERCIAL		INDUSTRIAL			IND	CUM								L/s	(%)
													IND	CUM	IND	CUM	IND	CUM											
Lake Avenue West		MH1	MH2	1			8	0.25	17.8	17.8	3.71	0.21		0.00		0.00		0.00	0.00	0.25	0.25	0.08	0.29	19.36	52.20	200	0.32	0.597	19.06	98.48
Lake Avenue West		MH2	MH3	3			8	0.24	24.6	42.4	3.66	0.50		0.00		0.00		0.00	0.00	0.24	0.49	0.16	0.66	19.36	56.59	200	0.32	0.597	18.69	96.56
		MH3	MH4	0			0	0.00	0.0	42.4	3.66	0.50		0.00		0.00		0.00	0.00	0.00	0.49	0.16	0.66	19.36	6.25	200	0.32	0.597	18.69	96.56
		MH4	Pump STN					0.00	0.0	42.4	3.66	0.50		0.00		0.00		0.00	0.00	0.00	0.49	0.16	0.66	19.66	32.97	200	0.33	0.606	18.99	96.62

Design Parameters:

Residential			ICI Areas			Peak Factor
SF	3.4	p/p/u				
TH/SD	2.7	p/p/u	INST	28,000	L/Ha/day	1.5
APT	1.8	p/p/u	COM	28,000	L/Ha/day	1.5
Other	60	p/p/Ha	IND	35,000	L/Ha/day	MOE Chart

Notes:
1. Mannings coefficient (n) = 0.013
2. Demand (per capita): 280 L/day
3. Infiltration allowance: 0.33 L/s/Ha
4. Residential Peaking Factor:
Harmon Formula = 1+(14/(4+P^0.5)*0.8)
where P = population in thousands

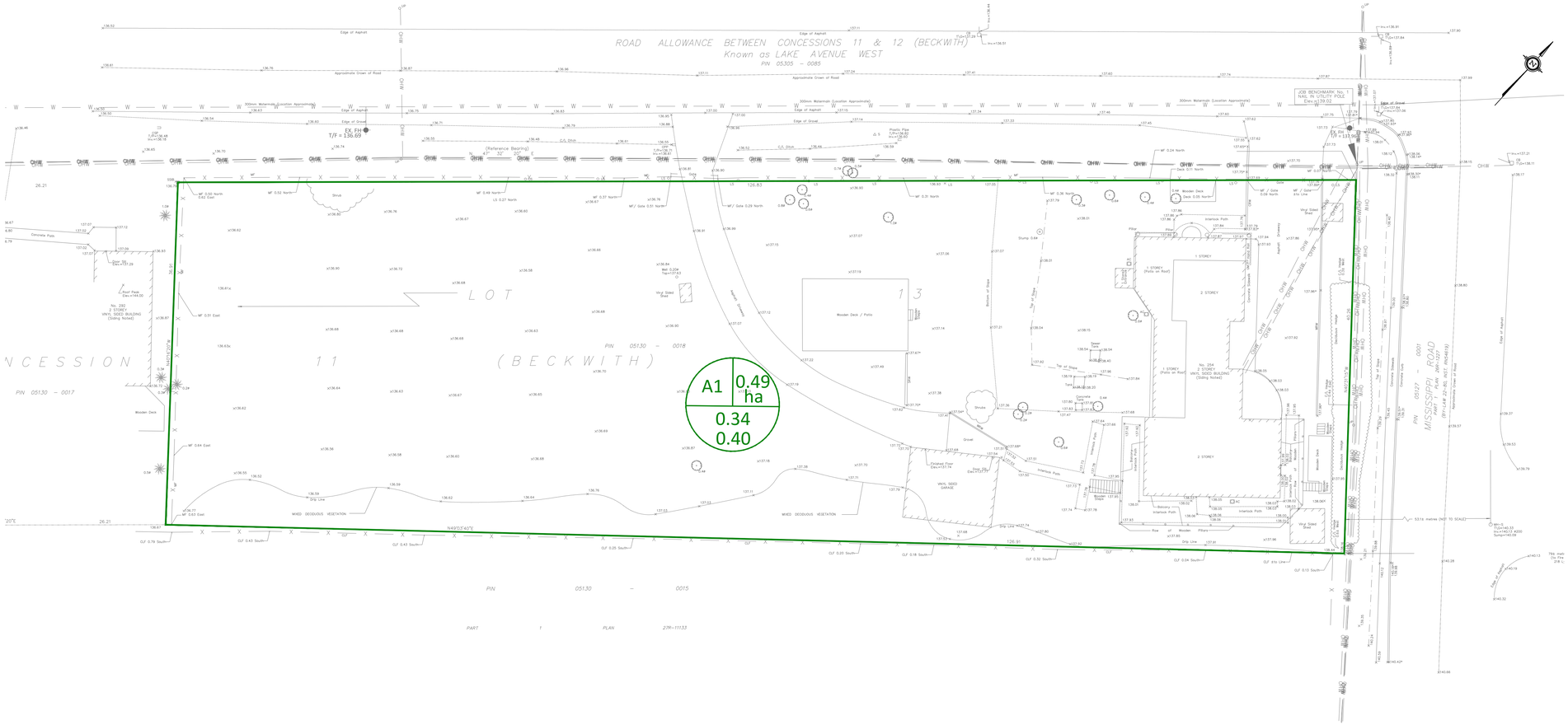
Designed: FV
Checked: AM
Project No.: CCO-22-1448

No.	Revision	Date
1.	Issued for Review	2023-02-08

Sheet No: 1 of 1

APPENDIX E
PRE-DEVELOPMENT DRAINAGE PLAN

McINTOSH PERRY



LOCATION PLAN

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

No.	Revisions	Date
1	ISSUED FOR REVIEW	FEB. 08, 2023

Check and verify all dimensions before proceeding with the work

Do not scale drawings

SCALE 1 : 250

0 5 10 15 20 25 Metres

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Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

Stamp:

Client:
ESCAPE HOMES
254 LAKE AVENUE WEST
CARLETON PLACE, ON K7C 1M4

Project:
254 LAKE AVENUE WEST

Drawing Title:
PRE-DEVELOPMENT DRAINAGE PLAN

Scale: 1:250

Project Number: CO-22-1448

Drawn By: FV

Checked By: AM

Drawing Number: PRE

Designed By: AG

D07-12-XX-XXXX

#XXXXX

LEGEND:

GENERAL NOTES

1. THE ORIGINAL TOPOGRAPHY, GROUND ELEVATION AND SURVEY DATA SHOWN ARE SUPPLIED FOR INFORMATION PURPOSES ONLY, AND IMPLY NO GUARANTEE OF ACCURACY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL INFORMATION SHOWN.
2. THIS PLAN IS NOT A CADASTRAL SURVEY SHOWING LEGAL PROPERTY BOUNDARIES AND EASEMENTS. THE PROPERTY BOUNDARIES SHOWN HEREON HAVE BEEN DERIVED INFORMATION SUPPLIED BY (OR SHOWN ON) ANNIS, O'SULLIVAN, VOLLEBEKK LTD. DRAWING 17446-21 AND CANNOT BE RELIED UPON TO BE ACCURATE OR COMPLETE. THE PRECISE LOCATION OF THE CURRENT PROPERTY BOUNDARIES AND EASEMENTS CAN ONLY BE DETERMINED BY AN UP-TO-DATE LAND TITLES SEARCH AND A SUBSEQUENT CADASTRAL SURVEY PERFORMED AND CERTIFIED BY AN ONTARIO LAND SURVEYOR.
3. THE CONTRACTOR IS TO OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY BEFORE COMMENCING CONSTRUCTION.
4. THE CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT.
5. THE CONTRACTOR IS TO DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME ALL RESPONSIBILITY FOR EXISTING UTILITIES WHETHER OR NOT SHOWN ON THESE DRAWINGS. IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.
6. RESTORE ALL TRENCHES AND SURFACES OF PUBLIC ROAD ALLOWANCES TO CONDITION EQUAL OR BETTER THAN ORIGINAL CONDITION AND TO THE SATISFACTION OF THE CITY AUTHORITIES.
7. EXCAVATE AND DISPOSE OF ALL EXCESS EXCAVATED MATERIAL, SUCH AS ASPHALT, CURBING AND DEBRIS, OFF SITE AS DIRECTED BY THE ENGINEER AND THE CITY.
8. TOPSOIL TO BE STRIPPED AND STOCKPILED FOR REHABILITATION. CLEAN FILL TO BE PLACED IN FILL AREAS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.
9. ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER UNLESS OTHERWISE SPECIFIED.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL AND SAFETY MEASURES DURING THE CONSTRUCTION PERIOD, INCLUDING THE SUPPLY, INSTALLATION, AND REMOVAL OF ALL NECESSARY SIGNAGE, DELINEATORS, MARKERS AND BARRIERS.
11. DO NOT ALTER GRADING OF THE SITE WITHOUT PRIOR APPROVAL OF THE ENGINEER/CITY.
12. ALL ROADWAY, PARKING LOT, AND GRADING WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS. THE CONTRACTOR IS TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE BUILDING.
13. CONTACT THE CITY FOR INSPECTION OF ROUGH GRADING OF PARKING LOTS, ROADWAYS AND LANDSCAPED AREAS PRIOR TO PLACEMENT OF ASPHALT AND TOPSOIL. ALL DEFICIENCIES NOTED SHALL BE RECTIFIED TO THE CITY'S SATISFACTION PRIOR TO PLACEMENT OF ANY ASPHALT, TOPSOIL, SEED & MULCH AND/OR SOD.
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    - ELECTRICAL SERVICE - HYDRO ONE,
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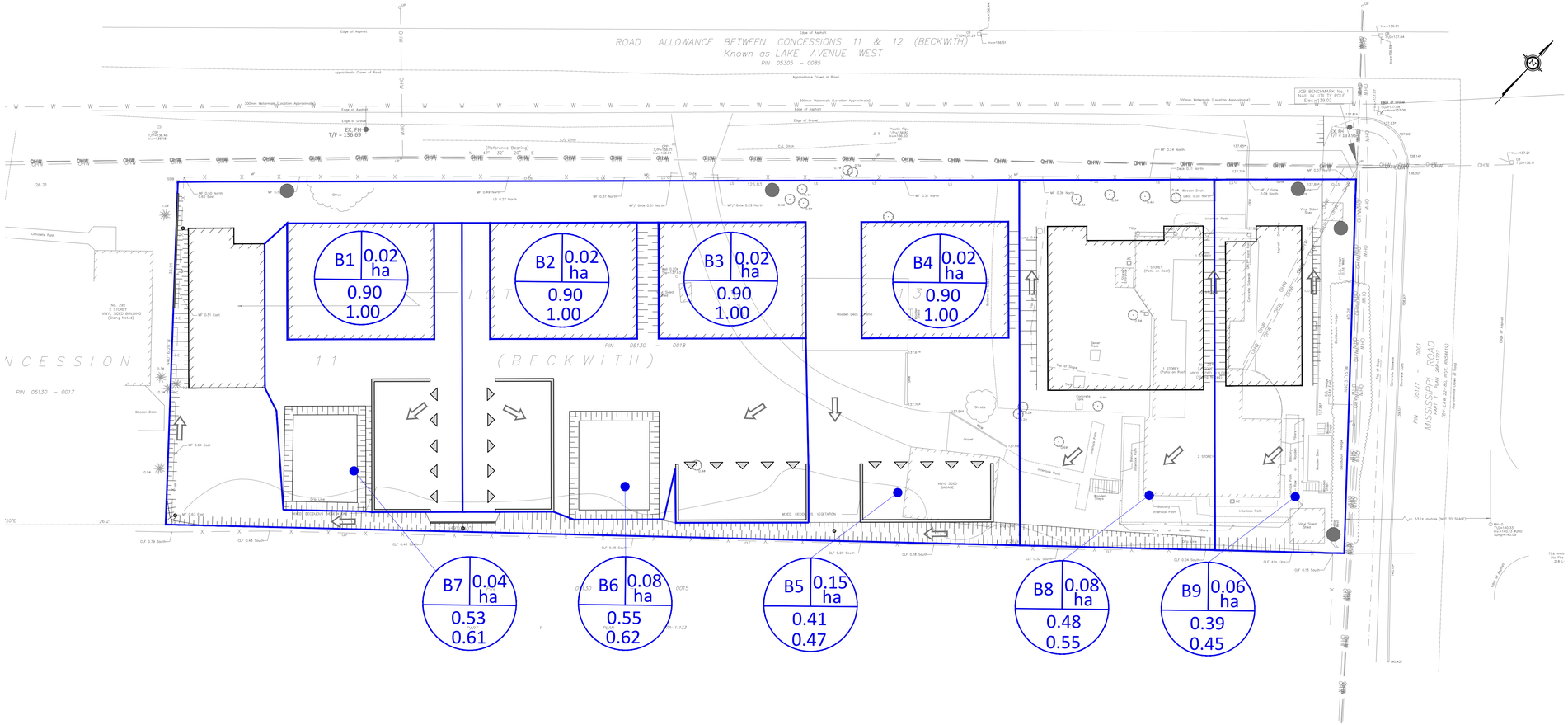
    - TELEPHONE SERVICE - BELL CANADA,
    - TELEVISION SERVICE - ROGERS.
16. INSTALLATION TO BE IN ACCORDANCE WITH CURRENT CODES AND STANDARDS OF APPROVAL AGENCIES HYDRO ONE, BELL AND THE CITY.
17. CONTRACTOR TO ENSURE ALL APPLICABLE OPS SPECIFICATIONS ARE FOLLOWED DURING CONSTRUCTION
18. ALL PROPOSED CURB TO BE CONCRETE BARRIER CURB UNLESS OTHERWISE SPECIFIED.

FILENAME: U:\Ottawa\01 Project - Proposals\2022 Jobs\CCO\CCO-22-1448 Escape Fire_SPC_254 Lake Ave, Carleton Place\12 - Drawings\CCO-22-1448 Presentation.dwg
LAST SAVED: Wednesday, February 08, 2023 LAST SAVED BY: F.Valenti
LAST PLOTTED: Wednesday, February 08, 2023 CTB FILE USED: ----

APPENDIX F
POST-DEVELOPMENT DRAINAGE PLAN

McINTOSH PERRY



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6. RESTORE ALL TRENCHES AND SURFACES OF PUBLIC ROAD ALLOWANCES TO CONDITION EQUAL OR BETTER THAN ORIGINAL CONDITION AND TO THE SATISFACTION OF THE CITY AUTHORITIES.
7. EXCAVATE AND DISPOSE OF ALL EXCESS EXCAVATED MATERIAL, SUCH AS ASPHALT, CURBING AND DEBRIS, OFF SITE AS DIRECTED BY THE ENGINEER AND THE CITY.
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18. ALL PROPOSED CURB TO BE CONCRETE BARRIER CURB UNLESS OTHERWISE SPECIFIED.

LEGEND:

LOCATION PLAN

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

No.	Revisions	Date
1	ISSUED FOR REVIEW	FEB. 08, 2023

Check and verify all dimensions before proceeding with the work

Do not scale drawings

SCALE 1 : 250
0 5 10 15 20 25 Metres

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Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

Stamp:

Client:
ESCAPE HOMES
254 LAKE AVENUE WEST
CARLETON PLACE, ON K7C 1M4

Project:
254 LAKE AVENUE WEST

Drawing Title:
POST-DEVELOPMENT DRAINAGE PLAN

Scale: 1:250
Drawn By: FV
Checked By: AM
Designed By: AG
Project Number: CO-22-1448
Drawing Number: POST

D07-12-XX-XXXX

#XXXXX

FILENAME: U:\Ottawa\01 Project - Proposals\2022 Jobs\CCO\CCO-22-1448 Escape Fire_SPC_254 Lake Ave, Carleton Place\12 - Drawings\CCO-22-1448 Presentation.dwg
LAST SAVED: Wednesday, February 08, 2023 LAST SAVED BY: F.Valenti
LAST PLOTTED: Wednesday, February 08, 2023 CTB FILE USED: ---

APPENDIX G
STORMWATER MANAGEMENT CALCULATIONS

McINTOSH PERRY

CO-22-1448 - 254 Lake Avenue West

Tc (min)	Intensity (mm/hr)	
	5-Year	100-Year
20	70.3	120.0
10	104.2	178.6

C-Values	
Impervious	0.90
Gravel	0.60
Pervious	0.20

Pre-Development Runoff Coefficient

Drainage Area	Impervious Area (m^2)	Gravel (m^2)	Pervious Area (m^2)	Average C (5-year)	Average C (100-year)
A1	972	17	3,904	0.34	0.40

Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C 5-Year	C 100-Year	Tc (min)	Q (L/s)	
					5-Year	100-Year
A1	0.49	0.34	0.40	10	48.24	97.31
Total	**0.49**				**48.24**	**97.31**

Post-Development Runoff Coefficient

Drainage Area	Impervious Area (m^2)	Gravel (m^2)	Pervious Area (m^2)	Average C (5-year)	Average C (100-year)	
B1	197.80	0	0	0.90	1.00	*Roof 1*
B2	197.80	0	0	0.90	1.00	*Roof 2*
B3	197.80	0	0	0.90	1.00	*Roof 3*
B4	197.80	0	0	0.90	1.00	*Roof 4*
B5	429.22	0	1,028	0.41	0.47	*Unrestricted*
B6	393.18	0	396	0.55	0.62	*Surface Restricted*
B7	209.48	0	230	0.53	0.61	*Surface Restricted*
B8	331.66	0	485	0.48	0.55	*Unrestricted*
B9	156.14	0	427	0.39	0.45	*Unrestricted*

Post-Development Runoff Calculations

Drainage Area	Area (ha)	C 5-Year	C 100-Year	Tc (min)	Q (L/s)		
					5-Year	100-Year	
B1	0.02	0.90	1.00	10	5.16	9.82	*Restricted - Roof 1*
B2	0.02	0.90	1.00	10	5.16	9.82	*Restricted - Roof 2*
B3	0.02	0.90	1.00	10	5.16	9.82	*Restricted - Roof 3*
B4	0.02	0.90	1.00	10	5.16	9.82	*Restricted - Roof 4*
B5	0.15	0.41	0.47	10	17.14	34.06	*Unrestricted*
B6	0.08	0.55	0.62	10	12.54	24.43	*Surface Restricted*
B7	0.04	0.53	0.61	10	6.80	13.26	*Surface Restricted*
B8	0.08	0.48	0.55	10	11.46	22.49	*Unrestricted*
B9	0.06	0.39	0.45	10	6.55	13.05	*Unrestricted*
Total	**0.49**				**75.11**	**146.56**	

Required Restricted Flow

Drainage Area	Area (ha)	C 5-Year	Tc (min)	Q (L/s)	Q (L/s)
				5-Year	100-Year
A1	0.49	0.34	10	48.24	97.31

Post-Development Restricted Runoff Calculations

Drainage Area	Unrestricted Flow (L/S)		Restricted Flow (L/S)		Storage Required (m^3)		Storage Provided (m^3)	
	5-year	100-Year	5-Year	100-Year	5-Year	100-Year	5-Year	100-Year
B1	5.16	9.82	0.42	0.72	4.3	8.5	5.2	8.9
B2	5.16	9.82	0.42	0.72	4.3	8.5	5.2	8.9
B3	5.16	9.82	0.42	0.72	4.3	8.5	5.2	8.9
B4	5.16	9.82	0.42	0.72	4.3	8.5	5.2	8.9
B5	17.14	34.06	17.14	34.06				
B6	12.54	24.43	4.67	7.53	4.7	10.7	4.9	11.9
B7	6.80	13.26	2.95	5.11	2.3	4.9	2.6	5.5
B8	11.46	22.49	11.46	22.49				
B9	6.55	13.05	6.55	13.05				
Total	**75.11**	**146.56**	**44.45**	**85.12**	24.4	49.5	28.3	53.0

CO-22-1448 - 254 Lake Avenue West

Storage Requirements for Area B1

5-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B1	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	104.2	5.16	0.42	4.74	2.84
20	70.3	3.48	0.42	3.06	3.67
30	53.9	2.67	0.42	2.25	4.05
40	44.2	2.19	0.42	1.77	4.24
50	37.7	1.87	0.42	1.45	4.34
60	32.9	1.63	0.42	1.21	4.35
70	29.4	1.45	0.42	1.03	4.35
80	26.6	1.32	0.42	0.90	4.30

Maximum Storage Required 5-year =	4.35	m^3

100-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B1	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	178.6	9.82	0.72	9.10	5.46
20	120.0	6.60	0.72	5.88	7.05
30	91.9	5.05	0.72	4.33	7.80
40	75.1	4.13	0.72	3.41	8.18
50	64.0	3.52	0.72	2.80	8.40
60	55.9	3.07	0.72	2.35	8.47
70	49.8	2.74	0.72	2.02	8.48
80	45.0	2.47	0.72	1.75	8.42
90	41.1	2.26	0.72	1.54	8.32
100	37.9	2.08	0.72	1.36	8.18

Maximum Storage Required 100-year =	8.48	m^3

5-Year Storm Event Storage Summary

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	148.35	0.035	5.19

Storage Available (m^3) =	5.19
Storage Required (m^3) =	4.35

100-Year Storm Event Storage Summary

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	148.35	0.060	8.90

Storage Available (m^3) =	8.90
Storage Required (m^3) =	8.48

*Area is 75% of the total roof area

CO-22-1448 - 254 Lake Avenue West

Storage Requirements for Area B2

5-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B2	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	104.2	5.16	0.42	4.74	2.84
20	70.3	3.48	0.42	3.06	3.67
30	53.9	2.67	0.42	2.25	4.05
40	44.2	2.19	0.42	1.77	4.24
50	37.7	1.87	0.42	1.45	4.34
60	32.9	1.63	0.42	1.21	4.35
70	29.4	1.45	0.42	1.03	4.35
80	26.6	1.32	0.42	0.90	4.30

Maximum Storage Required 5-year =	4.35	m^3

100-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B2	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	178.6	9.82	0.72	9.10	5.46
20	120.0	6.60	0.72	5.88	7.05
30	91.9	5.05	0.72	4.33	7.80
40	75.1	4.13	0.72	3.41	8.18
50	64.0	3.52	0.72	2.80	8.40
60	55.9	3.07	0.72	2.35	8.47
70	49.8	2.74	0.72	2.02	8.48
80	45.0	2.47	0.72	1.75	8.42
90	41.1	2.26	0.72	1.54	8.32
100	37.9	2.08	0.72	1.36	8.18

Maximum Storage Required 100-year =	8.48	m^3

5-Year Storm Event Storage Summary

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	148.35	0.035	5.19

Storage Available (m^3) =	5.19
Storage Required (m^3) =	4.35

100-Year Storm Event Storage Summary

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	148.35	0.060	8.90

Storage Available (m^3) =	8.90
Storage Required (m^3) =	8.48

*Area is 75% of the total roof area

CO-22-1448 - 254 Lake Avenue West

Storage Requirements for Area B3

5-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B3	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	104.2	5.16	0.42	4.74	2.84
20	70.3	3.48	0.42	3.06	3.67
30	53.9	2.67	0.42	2.25	4.05
40	44.2	2.19	0.42	1.77	4.24
50	37.7	1.87	0.42	1.45	4.34
60	32.9	1.63	0.42	1.21	4.35
70	29.4	1.45	0.42	1.03	4.35
80	26.6	1.32	0.42	0.90	4.30

Maximum Storage Required 5-year =	4.35	m^3

100-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B3	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	178.6	9.82	0.72	9.10	5.46
20	120.0	6.60	0.72	5.88	7.05
30	91.9	5.05	0.72	4.33	7.80
40	75.1	4.13	0.72	3.41	8.18
50	64.0	3.52	0.72	2.80	8.40
60	55.9	3.07	0.72	2.35	8.47
70	49.8	2.74	0.72	2.02	8.48
80	45.0	2.47	0.72	1.75	8.42
90	41.1	2.26	0.72	1.54	8.32
100	37.9	2.08	0.72	1.36	8.18

Maximum Storage Required 100-year =	8.48	m^3

5-Year Storm Event Storage Summary

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	148.35	0.035	5.19

Storage Available (m^3) =	5.19
Storage Required (m^3) =	4.35

100-Year Storm Event Storage Summary

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	148.35	0.060	8.90

Storage Available (m^3) =	8.90
Storage Required (m^3) =	8.48

*Area is 75% of the total roof area

CO-22-1448 - 254 Lake Avenue West

Storage Requirements for Area B4

5-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B4	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	104.2	5.16	0.42	4.74	2.84
20	70.3	3.48	0.42	3.06	3.67
30	53.9	2.67	0.42	2.25	4.05
40	44.2	2.19	0.42	1.77	4.24
50	37.7	1.87	0.42	1.45	4.34
60	32.9	1.63	0.42	1.21	4.35
70	29.4	1.45	0.42	1.03	4.35
80	26.6	1.32	0.42	0.90	4.30

Maximum Storage Required 5-year =	4.35	m^3

100-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B4	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	178.6	9.82	0.72	9.10	5.46
20	120.0	6.60	0.72	5.88	7.05
30	91.9	5.05	0.72	4.33	7.80
40	75.1	4.13	0.72	3.41	8.18
50	64.0	3.52	0.72	2.80	8.40
60	55.9	3.07	0.72	2.35	8.47
70	49.8	2.74	0.72	2.02	8.48
80	45.0	2.47	0.72	1.75	8.42
90	41.1	2.26	0.72	1.54	8.32
100	37.9	2.08	0.72	1.36	8.18

Maximum Storage Required 100-year =	8.48	m^3

5-Year Storm Event Storage Summary

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	148.35	0.035	5.19

Storage Available (m^3) =	5.19
Storage Required (m^3) =	4.35

100-Year Storm Event Storage Summary

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	148.35	0.060	8.90

Storage Available (m^3) =	8.90
Storage Required (m^3) =	8.48

*Area is 75% of the total roof area

Roof Drain Flow (B1-B4)

Roof Drains Summary		
Type of Control Device	Watts Drainage - Accutrol Weir	
Number of Roof Drains	1	
	5-Year	100-Year
Rooftop Storage (m^3)	5.19	8.90
Storage Depth (mm)	0.035	0.060
Flow (Per Roof Drain) (L/s)	0.42	0.72
Total Flow (L/s)	0.42	0.72

Flow Rate Vs. Build-Up (One Weir)	
Depth (mm)	Flow (L/s)
15	0.18
20	0.24
25	0.30
30	0.36
35	0.42
40	0.48
45	0.54
50	0.60
55	0.66

*Roof Drain model to be Accutrol Weirs, See attached sheets
*Roof Drain Flow information taken from Watts Drainage website

CALCULATING ROOF FLOW EXAMPLES

1 roof drain during a 5 year storm
elevation of water = 25mm
Flow leaving 1 roof drain = (1 x 0.30 L/s) = 0.30 L/s

1 roof drain during a 100 year storm
elevation of water = 50mm
Flow leaving 1 roof drain = (1 x 0.60 L/s) = 0.60 L/s

4 roof drains during a 5 year storm
elevation of water = 25mm
Flow leaving 4 roof drains = (4 x 0.30 L/s) = 1.20 L/s

4 roof drains during a 100 year storm
elevation of water = 50mm
Flow leaving 4 roof drains = (4 x 0.60 L/s) = 2.40 L/s

	Roof Drain Flow		
	Flow (l/s)	Storage Depth (mm)	Drains Flow (l/s)
	0.18	15	0.18
	0.24	20	0.24
	0.30	25	0.30
	0.36	30	0.36
5-Year	**0.42**	**35**	**0.42**
	0.48	40	0.48
	0.54	45	0.54
	0.60	50	0.60
100-Year	**0.66**	**55**	**0.66**
	0.72	60	0.72
	0.78	65	0.78
	0.84	70	0.84
	0.90	75	0.90
	0.96	80	0.96
	1.02	85	1.02
	1.08	90	1.08
	1.14	95	1.14
	1.20	100	1.20
	1.26	105	1.26
	1.32	110	1.32
	1.38	115	1.38
	1.44	120	1.44
	1.50	125	1.50
	1.56	130	1.56
	1.62	135	1.62
	1.68	140	1.68
	1.74	145	1.74
	1.80	150	1.80

Note: The flow leaving through a restricted roof drain is based on flow vs. head information

Storage Requirements for Area B6

5-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B6	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	104.2	12.55	4.67	7.88	4.73
20	70.3	8.46	4.67	3.79	4.55
30	53.9	6.49	4.67	1.82	3.28
40	44.2	5.32	4.67	0.65	1.56

Maximum Storage Required 5-year =	4.73 m^3

100-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B6	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	178.6	24.44	7.53	16.91	10.15
20	120.0	16.42	7.53	8.89	10.67
30	91.9	12.58	7.53	5.05	9.08
40	75.1	10.28	7.53	2.75	6.59

Maximum Storage Required 100-year =	10.67 m^3

5-Year Storm Event Storage Summary

		Water Elev. (m) =		136.57	
Location	Btm Storage Area	INV. (out)	Depth (m)	Head (m)	Volume (m^3)
Storage Area 1	136.47	136.47	0.10	0.05	4.9

Storage Available (m^3) = 4.9
Storage Required (m^3) = 4.7

100-Year Storm Event Storage Summary

		Water Elev. (m) =		136.65	
Location	Btm Storage Area	INV. (out)	Depth (m)	Head (m)	Volume (m^3)
Storage Area 1	136.47	136.46	0.18	0.14	11.9

Storage Available (m^3) = 11.9
Storage Required (m^3) = 10.7

*Available Storage calculated from AutoCAD

CO-22-1448 - 254 Lake Avenue West

For Orifice Flow, C= 0.60
For Weir Flow, C= 1.84

	Orifice 1
invert elevation	136.47
center of crest elevation	136.52
orifice width / weir length	100 mm
weir height	
orifice area (m^2)	0.008

Elevation Discharge Table - Storm Routing

Elevation	Orifice 1		Orifice 2		Weir 1		Weir 2		Total	
	H [m]	Q [m^3/s]	H [m]	Q [m^3/s]	H [m]	Q [m^3/s]	H [m]	Q [m^3/s]	Q [L/s]	
136.47	x	x							0.00	
136.48	x	x							0.00	
136.49	x	x							0.00	
136.50	x	x							0.00	
136.51	x	x							0.00	
136.52	x	x							0.00	
136.53	0.01	0.00							2.09	
136.54	0.02	0.00							2.95	
136.55	0.03	0.00							3.62	
136.56	0.04	0.00							4.17	
136.57	0.05	0.00							4.67	5-Year
136.58	0.06	0.01							5.11	
136.59	0.07	0.01							5.52	
136.60	0.08	0.01							5.90	
136.61	0.09	0.01							6.26	
136.62	0.10	0.01							6.60	
136.63	0.11	0.01							6.92	
136.64	0.12	0.01							7.23	
136.65	0.13	0.01							7.53	100-Year
136.66	0.14	0.01							7.81	
136.67	0.15	0.01							8.08	
136.68	0.16	0.01							8.35	
136.69	0.17	0.01							8.61	
136.70	0.18	0.01							8.86	
136.71	0.19	0.01							9.10	
136.72	0.20	0.01							9.33	
136.73	0.21	0.01							9.57	
136.74	0.22	0.01							9.79	
136.75	0.23	0.01							10.01	
136.76	0.24	0.01							10.23	
136.77	0.25	0.01							10.44	
136.78	0.26	0.01							10.64	
136.79	0.27	0.01							10.85	
136.80	0.28	0.01							11.05	
136.81	0.29	0.01							11.24	
136.82	0.30	0.01							11.43	
136.83	0.31	0.01							11.62	
136.84	0.32	0.01							11.81	

Notes:
1. For Orifice Flow, User is to Input an Elevation Higher than Crown of Orifice.
2. Orifice Equation: $Q = cA(2gh)^{1/2}$
3. Weir Equation: $Q = CLH^{3/2}$
4. These Computations Do Not Account for Submergence Effects Within the Pond Riser.
5. H for orifice equations is depth of water above the centroide of the orifice.
6. H for weir equations is depth of water above the weir crest.

CO-22-1448 - 254 Lake Avenue West

Storage Requirements for Area B7

5-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B7	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	104.2	6.80	2.95	3.85	2.31
20	70.3	4.58	2.95	1.63	1.96
30	53.9	3.52	2.95	0.57	1.02
40	44.2	2.88	2.95	0.00	0.00
50	37.7	2.46	2.95	0.00	0.00
60	32.9	2.15	2.95	0.00	0.00
70	29.4	1.92	2.95	0.00	0.00
80	26.6	1.73	2.95	0.00	0.00
90	24.3	1.58	2.95	0.00	0.00

Maximum Storage Required 5-year =	2.31 m^3

100-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B7	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	178.6	13.26	5.11	8.15	4.89
20	120.0	8.91	5.11	3.80	4.56
30	91.9	6.82	5.11	1.71	3.08
40	75.1	5.58	5.11	0.47	1.12
50	64.0	4.75	5.11	0.00	0.00
60	55.9	4.15	5.11	0.00	0.00
70	49.8	3.70	5.11	0.00	0.00
80	45.0	3.34	5.11	0.00	0.00
90	41.1	3.05	5.11	0.00	0.00
100	37.9	2.81	5.11	0.00	0.00
110	35.2	2.61	5.11	0.00	0.00
120	32.9	2.44	5.11	0.00	0.00

Maximum Storage Required 100-year =	4.89 m^3

5-Year Storm Event Storage Summary

		Water Elev. (m) =		136.38	
Location	Btm Storage Area	INV. (out)	Depth (m)	Head (m)	Volume (m^3)
Storage Area 2	136.31	136.31	0.07	0.02	9.4

Storage Available (m^3) = 2.6 *
Storage Required (m^3) = 2.3

100-Year Storm Event Storage Summary

		Water Elev. (m) =		136.42	
Location	Btm Storage Area	INV. (out)	Depth (m)	Head (m)	Volume (m^3)
Storage Area 2	136.31	136.31	0.11	0.06	5.5

Storage Available (m^3) = 5.5 *
Storage Required (m^3) = 4.9

*Available Storage calculated from AutoCAD

CO-22-1448 - 254 Lake Avenue West

For Orifice Flow, C= 0.60
For Weir Flow, C= 1.84

	Orifice 1
invert elevation	136.31
center of crest elevation	136.36
orifice width / weir length	100 mm
weir height	
orifice area (m^2)	0.008

Tempest LMF 80 ICD is proposed based on Stormwater Analysis

Elevation Discharge Table - Storm Routing

Elevation	Orifice 1		Orifice 2		Weir 1		Weir 2		Total	
	H [m]	Q [m^3/s]	H [m]	Q [m^3/s]	H [m]	Q [m^3/s]	H [m]	Q [m^3/s]	Q [L/s]	
136.31	x	x							0.00	
136.32	x	x							0.00	
136.33	x	x							0.00	
136.34	x	x							0.00	
136.35	x	x							0.00	
136.36	x	x							0.00	
136.37	0.01	0.00							2.09	
136.38	0.02	0.00							2.95	5-Year
136.39	0.03	0.00							3.62	
136.40	0.04	0.00							4.17	
136.41	0.05	0.00							4.67	
136.42	0.06	0.01							5.11	100-Year
136.43	0.07	0.01							5.52	
136.44	0.08	0.01							5.90	
136.45	0.09	0.01							6.26	
136.46	0.10	0.01							6.60	
136.47	0.11	0.01							6.92	
136.48	0.12	0.01							7.23	
136.49	0.13	0.01							7.53	
136.50	0.14	0.01							7.81	
136.51	0.15	0.01							8.08	
136.52	0.16	0.01							8.35	
136.53	0.17	0.01							8.61	
136.54	0.18	0.01							8.86	
136.55	0.19	0.01							9.10	
136.56	0.20	0.01							9.33	
136.57	0.21	0.01							9.57	
136.58	0.22	0.01							9.79	
136.59	0.23	0.01							10.01	
136.60	0.24	0.01							10.23	
136.61	0.25	0.01							10.44	
136.62	0.26	0.01							10.64	
136.63	0.27	0.01							10.85	
136.64	0.28	0.01							11.05	
136.65	0.29	0.01							11.24	
136.66	0.30	0.01							11.43	
136.67	0.31	0.01							11.62	
136.68	0.32	0.01							11.81	

Notes:
1. For Orifice Flow, User is to Input an Elevation Higher than Crown of Orifice.
2. Orifice Equation: $Q = cA(2gh)^{1/2}$
3. Weir Equation: $Q = CLH^{3/2}$
4. These Computations Do Not Account for Submergence Effects Within the Pond Riser.
5. H for orifice equations is depth of water above the centroide of the orifice.
6. H for weir equations is depth of water above the weir crest.

Time of Concentration Pre-Development

Drainage Area ID	Sheet Flow Distance (m)	Slope of Land (%)	Tc (min) (5-Year)	Tc (min) (100-Year)
A1	**99**	**1.38**	10	7

Therefore, a Tc of 10 can be used

Tc= (3.26(1.1-c)L^0.5/S^0.33)

c = Balanced Runoff Coefficient

L = Length of drainage area

S = Average slope of watershed

APPENDIX H
CITY OF OTTAWA DESIGN CHECKLIST

McINTOSH PERRY

City of Ottawa

4. Development Servicing Study Checklist

The following section describes the checklist of the required content of servicing studies. It is expected that the proponent will address each one of the following items for the study to be deemed complete and ready for review by City of Ottawa Infrastructure Approvals staff.

The level of required detail in the Servicing Study will increase depending on the type of application. For example, for Official Plan amendments and re-zoning applications, the main issues will be to determine the capacity requirements for the proposed change in land use and confirm this against the existing capacity constraint, and to define the solutions, phasing of works and the financing of works to address the capacity constraint. For subdivisions and site plans, the above will be required with additional detailed information supporting the servicing within the development boundary.

4.1 General Content

Criteria	Location (if applicable)
☐ Executive Summary (for larger reports only).	N/A
☐ Date and revision number of the report.	On Cover
☐ Location map and plan showing municipal address, boundary, and layout of proposed development.	Appendix A
☐ Plan showing the site and location of all existing services.	Site Servicing Plan (C102)
☐ Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	1.1 Purpose 1.2 Site Description 7.0 Stormwater Management
☐ Summary of pre-consultation meetings with City and other approval agencies.	Appendix B
☐ Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.	1.1 Purpose 1.2 Site Description 7.0 Stormwater Management
☐ Statement of objectives and servicing criteria.	1.1 Purpose

☐ Identification of existing and proposed infrastructure available in the immediate area.	N/A
☐ Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	Site Grading Plan (C101)
☐ Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	Site Grading Plan (C101)
☐ Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	N/A
☐ Proposed phasing of the development, if applicable.	N/A
☐ Reference to geotechnical studies and recommendations concerning servicing.	Section 2.0 Background Studies, Standards and References
☐ All preliminary and formal site plan submissions should have the following information: ○ Metric scale ○ North arrow (including construction North) ○ Key plan ○ Name and contact information of applicant and property owner ○ Property limits including bearings and dimensions ○ Existing and proposed structures and parking areas ○ Easements, road widening and rights-of-way ○ Adjacent street names	Site Grading Plan (C101)

4.2 Development Servicing Report: Water

Criteria	Location (if applicable)
☐ Confirm consistency with Master Servicing Study, if available	N/A
☐ Availability of public infrastructure to service proposed development	N/A
☐ Identification of system constraints	N/A
☐ Identify boundary conditions	Appendix C
☐ Confirmation of adequate domestic supply and pressure	N/A
☐ Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.	Appendix C
☐ Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.	N/A
☐ Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design	N/A
☐ Address reliability requirements such as appropriate location of shut-off valves	N/A
☐ Check on the necessity of a pressure zone boundary modification.	N/A
☐ Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range	Appendix C, Section 3.2

☐ Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.	Site Servicing Plan (C101)
☐ Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	N/A
☐ Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Appendix C
☐ Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	N/A

4.3 Development Servicing Report: Wastewater

Criteria	Location (if applicable)
☐ Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).	N/A
☐ Confirm consistency with Master Servicing Study and/or justifications for deviations.	N/A
☐ Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.	N/A
☐ Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 5.2 Proposed Sanitary Sewer

☐ Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)	Section 4.2 Proposed Sanitary Design
☐ Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	N/A
☐ Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 4.2 Proposed Sanitary Sewer
☐ Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).	N/A
☐ Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	N/A
☐ Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
☐ Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	N/A
☐ Special considerations such as contamination, corrosive environment etc.	N/A

4.4 Development Servicing Report: Stormwater Checklist

Criteria	Location (if applicable)
☐ Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 5.0 Stormwater Sewer Design & Section 6.0 Proposed Stormwater Management
☐ Analysis of available capacity in existing public infrastructure.	N/A
☐ A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Pre & Post-Development Plans
☐ Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5-year event (dependent on the receiving sewer design) to 100-year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	Section 5.0 Stormwater Sewer Design & Section 6.0 Proposed Stormwater Management
☐ Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 5.0 Stormwater Sewer Design & Section 6.0 Proposed Stormwater Management
☐ Description of the stormwater management concept with facility locations and descriptions with references and supporting information.	Section 5.0 Stormwater Sewer Design & Section 6.0 Proposed Stormwater Management
☐ Set-back from private sewage disposal systems.	N/A
☐ Watercourse and hazard lands setbacks.	N/A
☐ Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	N/A
☐ Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	N/A
☐ Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5-year return period) and major events (1:100-year return period).	Appendix G

☐ Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	Site Grading Plan
☐ Calculate pre-and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.	Section 6.0 Proposed Stormwater Management Appendix G
☐ Any proposed diversion of drainage catchment areas from one outlet to another.	Section 5.0 Stormwater Sewer Design & Section 6.0 Proposed Stormwater Management
☐ Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	Section 5.0 Stormwater Sewer Design & Section 6.0 Proposed Stormwater Management
☐ If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.	N/A
☐ Identification of potential impacts to receiving watercourses	N/A
☐ Identification of municipal drains and related approval requirements.	N/A
☐ Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 5.0 Stormwater Sewer Design & Section 6.0 Proposed Stormwater Management
☐ 100-year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	Site Grading Plan (C101)
☐ Inclusion of hydraulic analysis including hydraulic grade line elevations.	N/A

☐ Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Section 7.0 Sediment & Erosion Control
☐ Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	N/A
☐ Identification of fill constraints related to floodplain and geotechnical investigation.	N/A

4.5 Approval and Permit Requirements: Checklist

The Servicing Study shall provide a list of applicable permits and regulatory approvals necessary for the proposed development as well as the relevant issues affecting each approval. The approval and permitting shall include but not be limited to the following:

Criteria	Location (if applicable)
☐ Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.	N/A
☐ Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	N/A
☐ Changes to Municipal Drains.	N/A
☐ Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	N/A

4.6 Conclusion Checklist

Criteria	Location (if applicable)
☐ Clearly stated conclusions and recommendations	Section 8.0 Summary Section 9.0 Recommendations
☐ Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.	All are stamped
☐ All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	All are stamped